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GRE

GRADUATE
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EXAMINATION

ECONOMICS

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CHAPTER 1

MARKETS

Market Equilibrium - Mathematical Analysis

Assume a linear demand curve given by the following equation: $Q_d = a_0 + a_1P + a_2Y$, where Q_d is quantity demanded, P is price of the product, Y is consumer income, and a_0, a_1, and a_2 are parameters.

Assume a linear supply curve given by the following equation: $Q_s = b_0 + b_1P + b_2C$, where Q_s is quantity supplied, C is cost of production, and b_0, b_1, and b_2 are parameters. Both equations are known as **structural equations***.

In equilibrium, $Q_d = Q_s$ or $a_0 + a_1P + a_2Y = b_0 + b_1P + b_2C$. Solving for the equilibrium value of P gives

$$P = \frac{b_0 - a_0}{a_1 - b_1} - \frac{a_2}{a_1 - b_1}Y + \frac{b_2}{a_1 - b_1}C,$$

an expression known as a **reduced form.**

Substituting this expression into either the demand or supply equation gives the equilibrium value of Q. The expression obtained (also a reduced form) after substituting into the demand equation is

$$Q = a_0 + \frac{a_1(b_0 - a_0)}{a_1 - b_1} - \left(\frac{a_1a_2}{a_1 - b_1} + a_2\right)Y + \frac{a_1b_2}{a_1 - b_1}C.$$

Elasticity

The coefficient of elasticity is a measure of the responsiveness of a dependent variable to a change in an independent variable. The formula is

$$\text{coefficient of elasticity} = \frac{\%\Delta\text{dependent variable}}{\%\Delta\text{independent variable}}.$$

Some of the most widely used elasticities include:

(A) **Price-elasticity of demand (E_p).** E_p is a measure of the responsiveness of quantity demanded to changes in price.

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*Words or phrases in boldface are defined in the glossary. Only the first reference to each term is boldfaced.

$$E_p = \left(\frac{\%\Delta\text{quantity demanded}}{\%\Delta\text{price}}\right).$$

Numerical values for E_p fall into five categories:

(1) $E_p = 0$, perfectly inelastic
(2) $0 < E_p < 1$, inelastic
(3) $E_p = 1$, unit elastic
(4) $1 < E_p <$ infinity, elastic
(5) $E_p =$ infinity, perfectly elastic

Determinants of price-elasticity of demand:

(a) Necessity or luxury. The more necessary a good is, the more inelastic the demand.

(b) Availability of close substitutes. The fewer substitutes a good has, the more inelastic the demand.

(c) Share of budget absorbed. The smaller the share of a consumer's budget allocated to the good, the more inelastic the demand.

(d) Length of time considered. The shorter the length of time considered, the more inelastic the demand for the good.

(B) **Price-elasticity of supply (E_s).** E_s is a measure of the responsiveness of quantity supplied to changes in price.

$$E_s = \frac{\%\Delta\text{quantity supplied}}{\%\Delta\text{price}}.$$

Numerical values for E_s fall into five categories:

(1) $E_s = 0$, perfectly inelastic
(2) $0 < E_s < 1$, inelastic
(3) $E_s = 1$, unit elastic
(4) $1 < E_s <$ infinity, elastic
(5) $E_s =$ infinity, perfectly elastic

(C) **Cross-elasticity of demand ($E_{A,B}$).** $E_{A,B}$ is a measure of the responsiveness of the quantity demanded of good *A* to a change in the price of good *B*.

$$E_{A,B} = \frac{\%\Delta\text{quantity demanded of good } A}{\%\Delta\text{price of good } B}.$$

Numerical values for $E_{A,B}$ fall into two categories:

(1) $E_{A,B} > 0$, substitutes
(2) $E_{A,B} < 0$, complements

(D) **Income-elasticity of demand (E_y).** E_y is a measure of the responsiveness of quantity demanded to a change in income.

$$E_y = \frac{\%\Delta\text{quantity demanded}}{\%\Delta\text{income}}.$$

Numerical values for E_y fall into two categories:
(1) $E_y > 0$, normal good (2) $E_y < 0$, inferior good

Elasticity Formulas

There are two ways to measure elasticities: point elasticity and arc elasticity. Point elasticity measures elasticity for infinitesimal changes in the independent variable. Arc elasticity is used to measure discrete changes in the independent variable.

	Point Elasticity	*Arc Elasticity*
1. Price-elasticity of demand	$-\dfrac{\partial Q_d / Q_d}{\partial P / P}$	$-\dfrac{\dfrac{Q_1 - Q_0}{\frac{Q_1 + Q_0}{2}}}{\dfrac{P_1 - P_0}{\frac{P_1 + P_0}{2}}}$
2. Price-elasticity of supply	$\dfrac{\partial Q_s / Q_s}{\partial P / P}$	$\dfrac{\dfrac{Q_1 - Q_0}{\frac{Q_1 + Q_0}{2}}}{\dfrac{P_1 - P_0}{\frac{P_1 + P_0}{2}}}$
3. Cross-elasticity of demand	$\dfrac{\partial Q_A / Q_A}{\partial P_B / P_B}$	$\dfrac{\dfrac{Q_1^A - Q_0^A}{\frac{Q_1^A + Q_0^A}{2}}}{\dfrac{P_1^B - P_0^B}{\frac{P_1^B + P_0^B}{2}}}$
4. Income-elasticity of demand	$\dfrac{\partial Q / Q}{\partial Y / Y}$	$\dfrac{\dfrac{Q_1 - Q_0}{\frac{Q_1 + Q_0}{2}}}{\dfrac{Y_1 - Y_0}{\frac{Y_1 + Y_1}{2}}}$

CHAPTER 2

THEORY OF THE CONSUMER

Indifference Curves

An indifference curve shows all combinations of two goods that provide the same level of utility. In Figure 2-1, the curve U_1 shows all combinations of goods X and Y that furnish U_1 units of utility. Utility increases on curves lying farther from the origin $(U_2 > U_1 > U_0)$.

The absolute value of the slope of an indifference curve is the marginal rate of substitution of X for Y (MRS_{xy}), $MRS_{xy} = \left|\frac{\Delta Y}{\Delta X}\right|$. It measures the number of units of y the consumer would be willing to give up to get one more unit of x while maintaining the same level of utility. MRS_{xy} falls as one moves "down" the indifference curve.

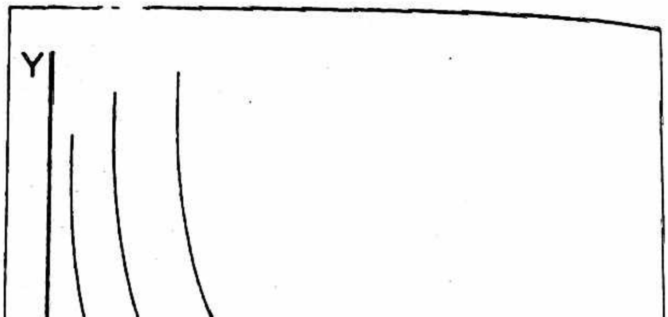

Figure 2-1 Indifference Curves

Budget Constraint

Assume there are only two goods, X and Y, with prices P_x and P_y, and the consumer has an income I. Then, $P_xX + P_yY = I$. Solving for Y yields the equation of the consumer's budget constraint: $Y = \frac{I}{P_y} - \frac{P_x}{P_y}X$. The constraint is graphed in Figure 2-2.

The constraint shows how many units of X and Y the consumer can consume, given his income and the prices of the two goods. The y-intercept is I/P_y, the amount of *Y* that could be consumed if the consumer spent all his income on *Y*; the x-intercept is I/P_x, the amount of *X* that could be consumed if the consumer spent all his income on *X*. The slope of the constraint is $-P_x/P_y$, the amount of *Y* that would have to be given up to get one additional unit of *X*.

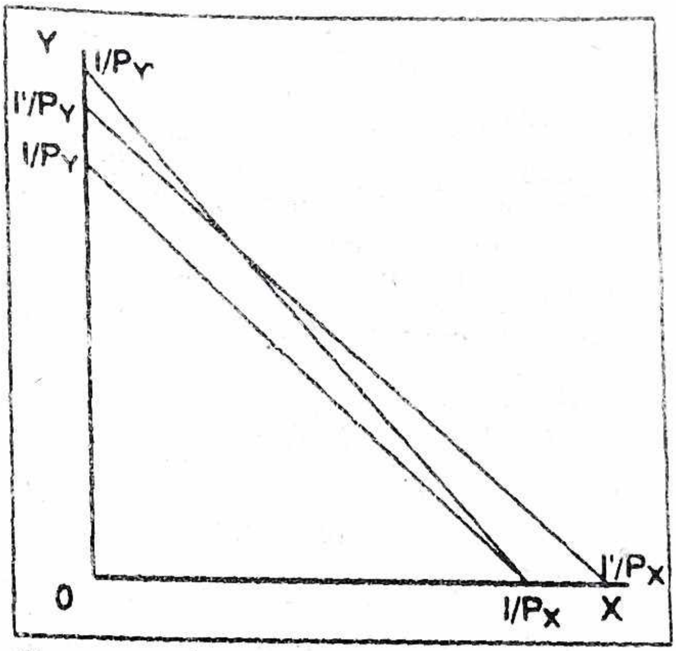

Figure 2-2 The Budget Constraint

If consumer income increases (from *I* to *I'*), the budget constraint will shift out parallel to itself (see Figure 2-2). If P_y falls from P_y to P'_y, the budget constraint will rotate out with I/P_x remaining as a fixed point (see Figure 2-2). The constraint will similarly rotate in if P_y rises. Similar movements will result from changes in P_x.

Consumer Equilibrium

The consumer seeks to consume the combination of *X* and *Y* that maximizes his utility. In Figure 2-3, that occurs at point *A*, where the consumer's entire income is exhausted and he reaches the highest indifference curve possible, given his income and the prices of the goods.

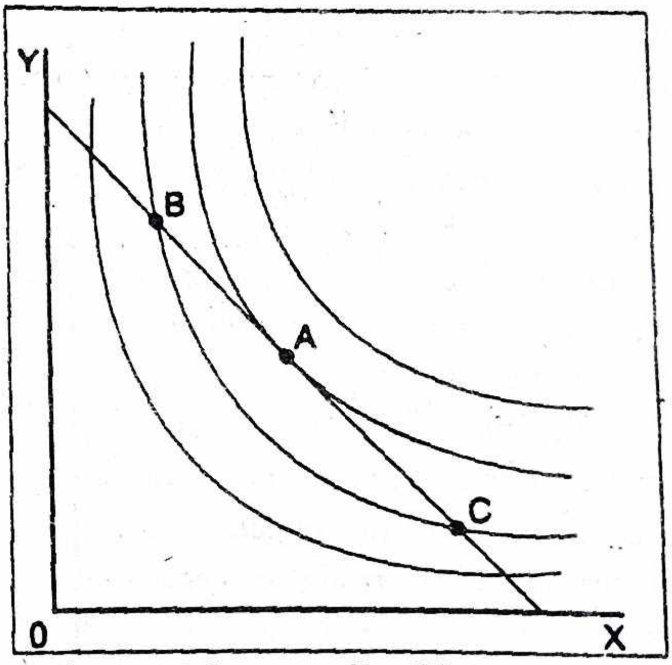

Figure 2-3 Consumer Equilibrium

At point *A*, the indifference curve is just tangent to the budget constraint. Mathematically, $MRS_{xy} = P_x/P_y$. At point *B*, $MRS_{xy} > P_x/P_y$. This means that the amount of *Y* the consumer is willing to give up to get an additional unit of *X* is greater than the amount he has to give up. In other words, the consumer can get additional *X* for less than he would be willing to trade for it. This means a trade of *Y* for *X* will lead to an increase in utility. At C, $MRS_{xy} < P_x/P_y$, the amount of *X* he has to give up to get one more unit of *Y* is less than what he is willing to give up. A trade of *X* for *Y* will allow him to increase his utility.

Derivation of the Demand Curve

Assume the consumer is at equilibrium at point *A* (see Figure 2-4). Then let P_x fall to P'_x and then to P''_x. The demand curve can be derived by plotting P_x against the equilibrium quantity of *X* consumed at each price level.

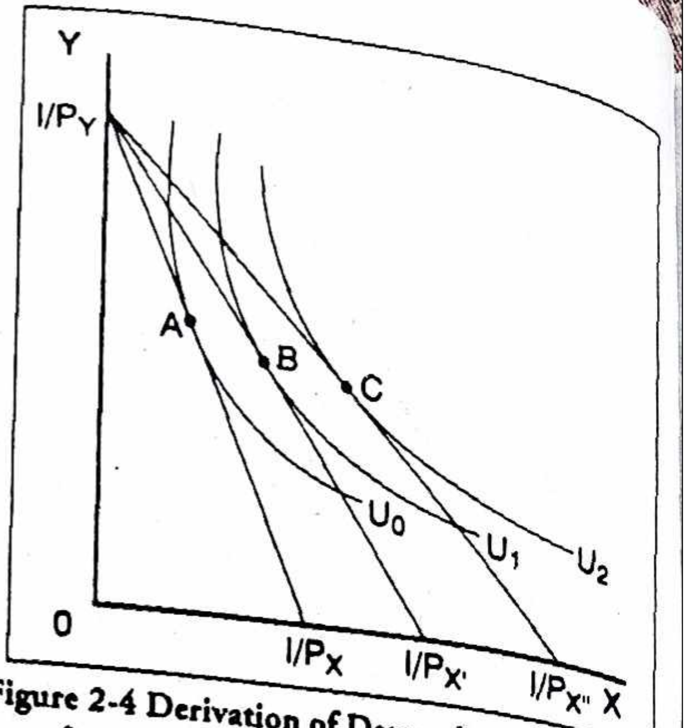

Figure 2-4 Derivation of Demand Curve

Income and Substitution Effects

The effect of a change in the price of a good on the quantity demanded of it can be decomposed into an income and substitution effect. The income effect is the effect that the change in consumer real income resulting from the change in the price of the product has on the quantity demanded. The substitution effect is the effect on quantity demanded resulting from the changed relative price of the product. Income and substitution effects are decomposed in Figure 2-5. Let the initial equilibrium be at point *A*. A decrease in P_x to P'_x rotates the budget constraint, leading to a new equilibrium at point *B*. Reduce the consumer's income from *I* to *I'* so the consumer can buy only enough to reach the original level of utility at point *C*. The increase in the quantity demanded of *X* from point *A* to *C* is the substitution effect. The substitution effect is always negative. The income effect is the movement from *C* to *B*. In the example, the income effect is positive, indicating that the good is normal. If the new equilibrium was at *D*, then the good would be inferior, although the total effect of the decrease in P_x is still to increase quantity demanded. If the new equilibrium was at *E*, the good was so inferior that a reduction in the price of *X* actually led to a decrease in the quantity demanded. This is the Giffen Good case, a situation unlikely to occur in the real world.

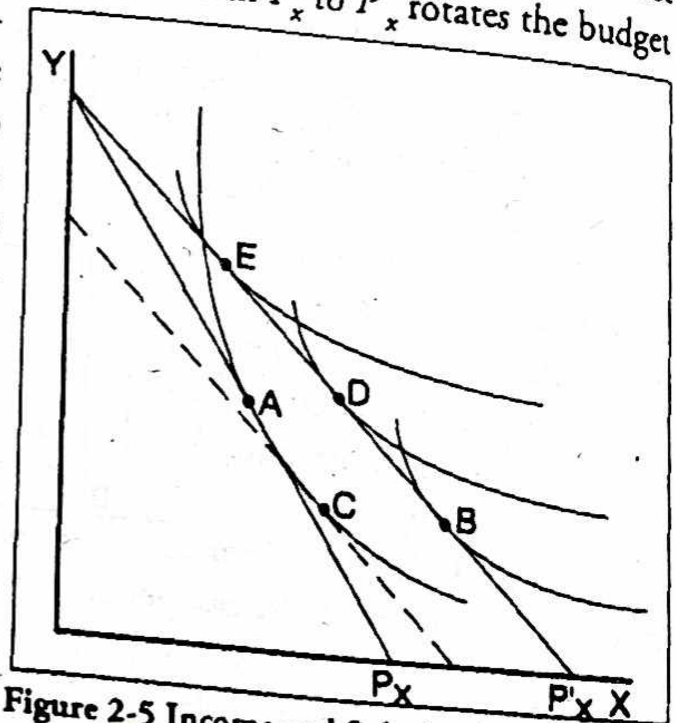

Figure 2-5 Income and Substitution Effects

This means a trade of Y for X will lead to an increase in utility. At C, $MRS_{xy} < P_y / P_y$ the amount of X he has to give up to get one more unit of Y is less than what he is willing to give up. A trade of X for Y will allow him to increase his utility.

Derivation of the Demand Curve

Assume the consumer is at equilibrium at point A (see Figure 2-4). Then let P_x fall to P'_x and then to P''_x. The demand curve can be derived by plotting P_x against the equilibrium quantity of X consumed at each price level.

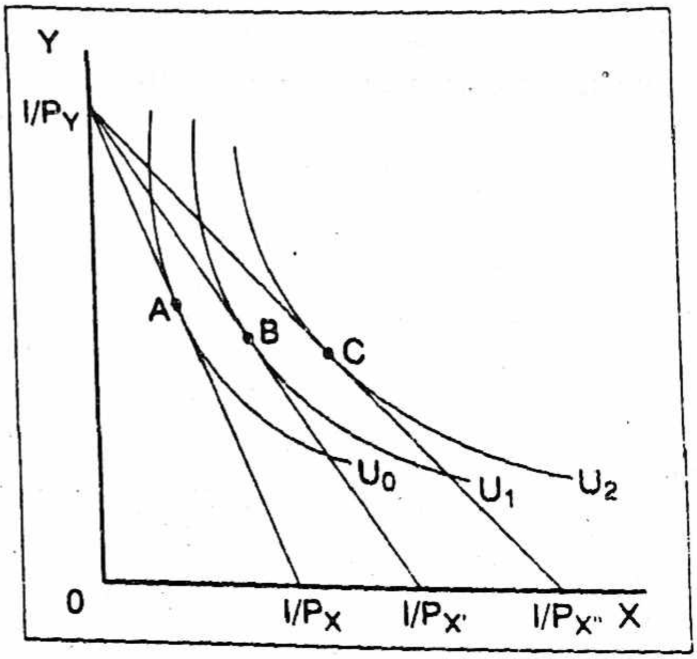

Figure 2-4 Derivation of Demand Curve

Income and Substitution Effects

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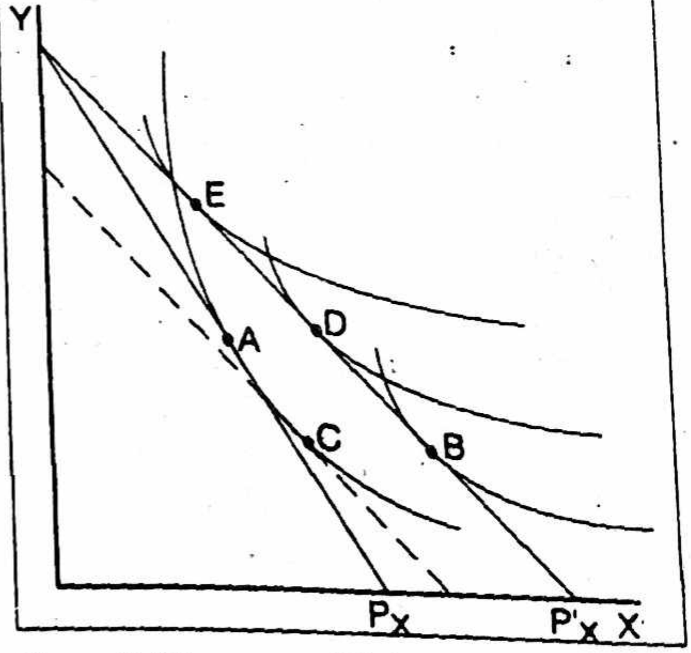


Figure 2-5 Income and Substitution Effects

from *C* to *B*. In the example, the income effect is positive, indicating that the good is normal. If the new equilibrium was at *D*, then the good would be inferior, although the total effect of the decrease in P_x is still to increase quantity demanded. If the new equilibrium was at *E*, the good was so inferior that a reduction in the price of *X* actually led to a decrease in the quantity demanded. This is the Giffen good case, a situation unlikely to occur in the real world.

CHAPTER 3

THEORY OF PRODUCTION

Production Function

If Q is output and I_i stands for the various inputs, a **production function** in general form can be written as $Q = f(I_1, I_2, \ldots, I_n)$.

Special Forms of the Production Function

1. Cobb-Douglas: $Q = b_0 K^{b_1} L^{b_2}$, where K is capital, L is labor, and b_0, b_1, and b_2 are parameters.
2. Constant Elasticity of Substitution (CES): $Q = b_0\left[b_1 K^r + \left(1 - b_1\right)L^r\right]^{\frac{1}{r}}$, where r is a parameter.

Short-Run Production

The analysis of **short-run** production considers the impact on total production of altering the amount of **variable inputs** used.

The upper graph in Figure 3-1 plots total product (*TP*) against the amount of variable input (*VI*) used (for a given amount of the **fixed factors**). At low levels of variable input usage, *TP* increases at an increasing rate. This results from specialization and division of labor. After point *a*, *TP* increases at a decreasing rate. This is the region of **diminishing returns**, which lasts until *b*, after which *TP* actually falls.

The lower graph plots average product (*AP*) and marginal product (*MP*). *AP* is defined as *TP*/*VI*. *MP* is the increase in *TP* from using one more unit of *VI*, and is defined as $\Delta\, TP/\Delta\, VI$. The region of diminishing returns runs from the high point of *MP* until the point at which $MP = 0$. Note that *MP* intersects *AP* at *AP*'s high point. When *AP* is rising, *MP* lies above it. When *AP* is falling, *MP* lies below it.

Long-Run Production

The analysis of **long-run** production considers the impact on total production of altering all the inputs. Using the general production function defined earlier, $Q = f(I_1, I_2, \ldots, I_n)$, if all the inputs are altered by a certain factor and output increases by that factor, then there are constant returns to scale, such as if each input is doubled and output doubles. If output increases by more than the factor, there are increasing returns to scale. If output increases by less than the factor, there are decreasing returns to scale.

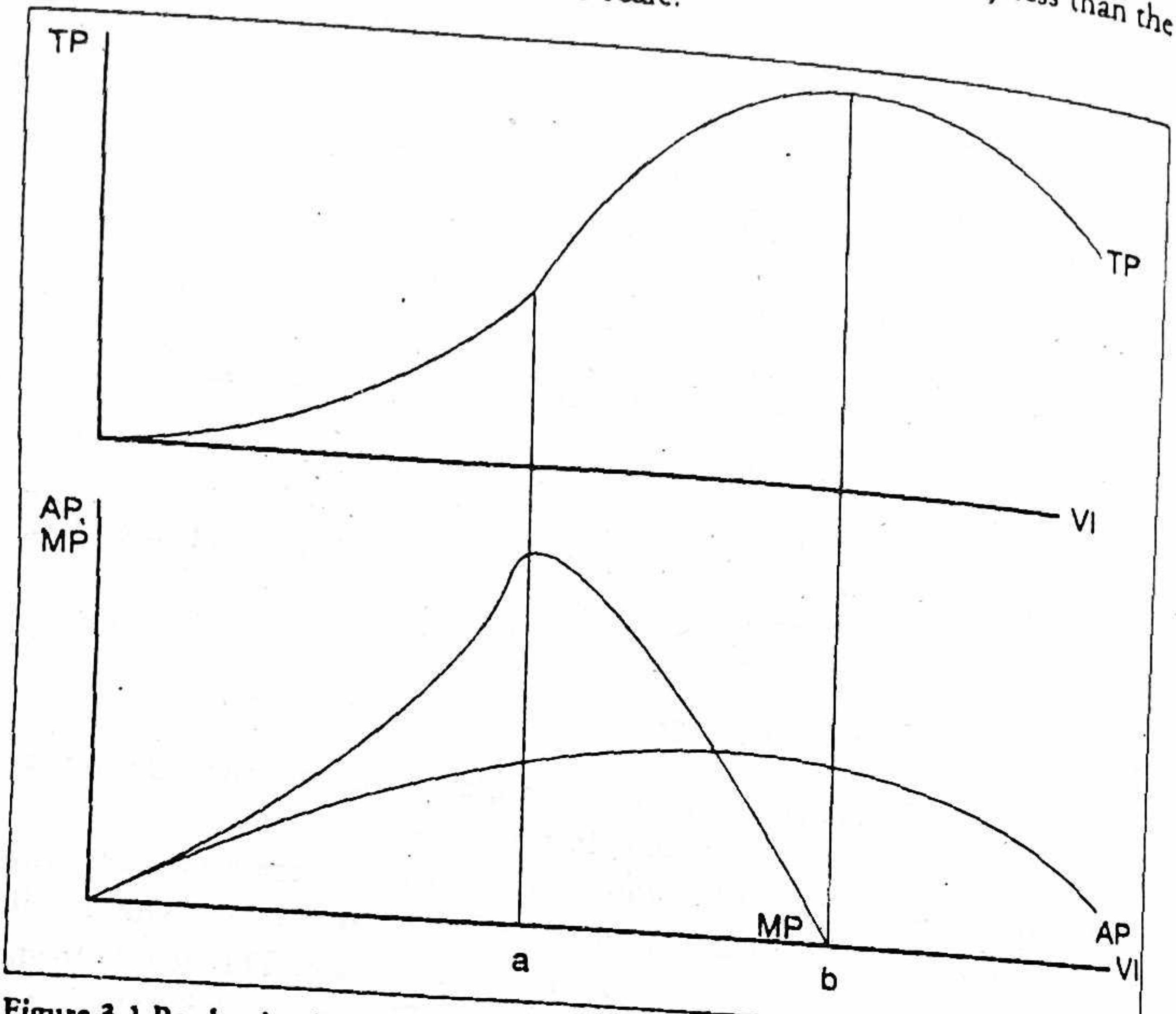


Figure 3-1 Production in the Short Run

Technological efficiency is achieved when: $MP_1/P_1 = MP_2/P_2 = \ldots = MP_n/P_n$, where *MP* stands for marginal product of factor *i* and *P* stands for the market price of factor *i*. The term MP_i/P_i refers to the marginal product of the last dollar spent on factor *i*. In equilibrium the marginal product of the last dollar spent on each input should be equal. If they were not, if $MP_1/P_1 > MP_2/P_2$, then output could be increased by spending one dollar less on input 2 and using that dollar to purchase input 1. As this reallocation takes place, MP_1/P_1 decreases (due to the law of diminishing returns) and MP_2/P_2 increases (for the same reason). If $MP_1/P_1 = MP_2/P_2$, then the amount of output lost by spending one dollar less on input 2 is matched by the amount produced by spending that dollar on input 1. Since no more output is produced, the firm is producing at maximum efficiency.

Isoquants

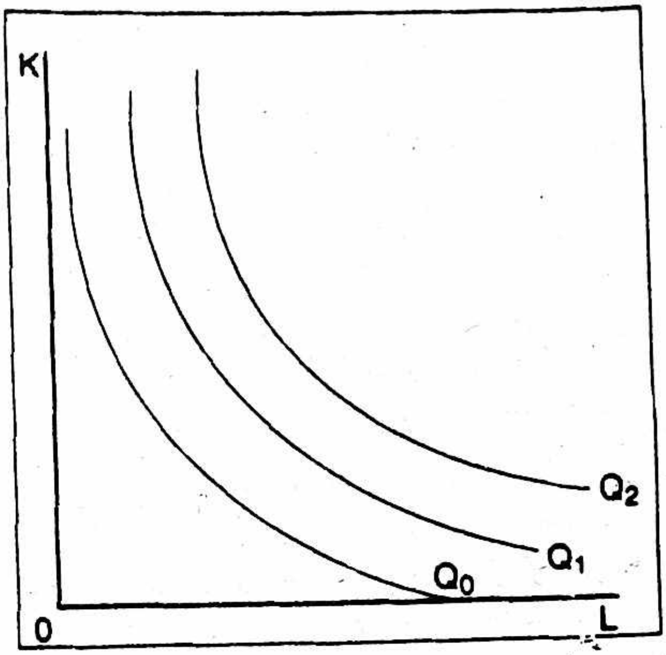


Figure 3-2 Isoquants

An isoquant shows all combinations of two inputs (K and L) that can be used to produce a given level of output. On Figure 3-2, isoquants lying farther from the origin are associated with higher levels of output ($Q_2 > Q_1 > Q_0$). The absolute value of the slope of an isoquant is called the marginal rate of technical substitution of L for K ($MRTS_{LK}$), where $MRTS_{LK} = \left|\frac{\Delta K}{\Delta L}\right|$. The $MRTS_{LK}$ measures how many units of K could be replaced by one unit of L while maintaining output at the same level. $MRTS_{LK}$ falls as one moves down the isoquant.

The Isocost Line

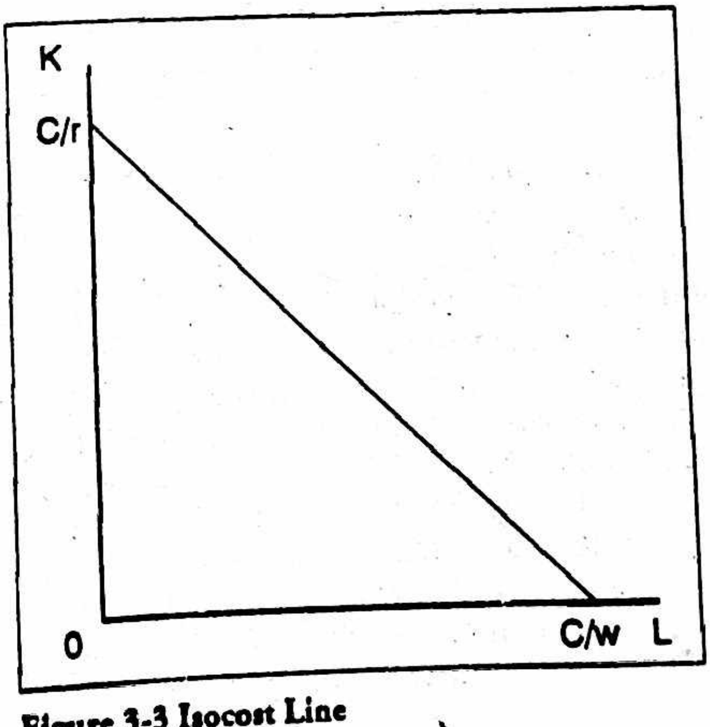


Figure 3-3 Isocost Line

Assume K costs r and L costs w per unit. Cost of production (C) is given by $C = rK + wL$. Solving for K gives $K = C/r - wL/r$, the equation of the firm's isocost line (refer to Figure 3-3). The horizontal intercept (C/w) measures how many units of L could be purchased if the firm's entire budget were spent on L. The vertical intercept (C/r) is similarly interpreted for K. The slope of the line is $-w/r$. The slope measures how many units of K could be replaced by one unit of L while maintaining constant costs of production.

In Figure 3-4, a reduction in w to w' rotates the line outward around C/r as the fixed point. A reduction in r to r' rotates the line outward around C/w as the fixed point. An increase in the firm's budget (from C to C') shifts the isocost line out parallel to itself.

Least Cost Production

The firm maximizes output for a given level of expenditure (or minimizes cost for a given level of output) by purchasing that combination of inputs where the isoquant is just tangent to the isocost line (point A in Figure 3-5). There, $MRTS_{LK} = -w/r$.

At point B, $MRTS_{LK} > -w/r$. This means that the amount of K that could be replaced by one L, keeping output constant, is greater than the amount of K that could be replaced by one unit of L, keeping costs constant. In short, substituting L for K will allow greater output at the same cost. At C the opposite is true.

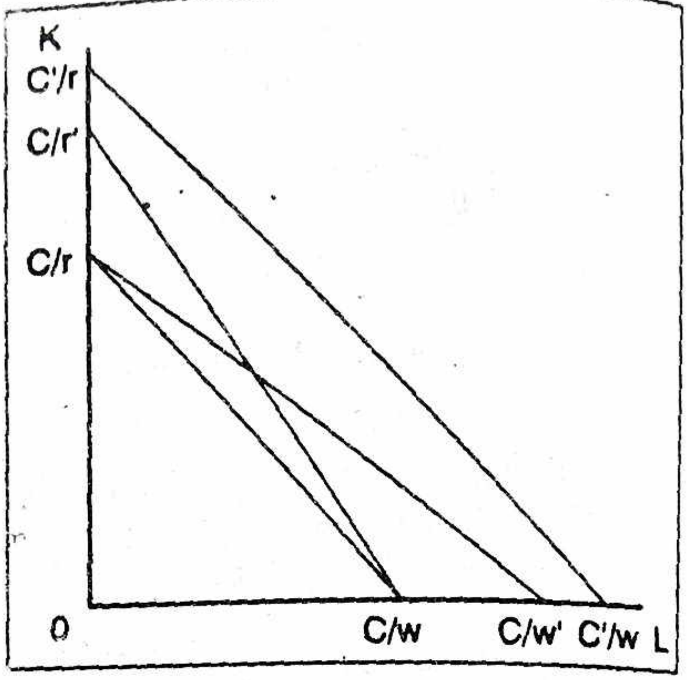


Figure 3-4 Changes in Isocost Line

Costs of Production

In economics, **implicit** and **explicit costs** are included in the total cost of production. An important element in the consideration of costs is an analysis of the various cost curves. In the short run, total costs (TC) can be divided into *fixed costs* (FC) and *variable costs* (VC).

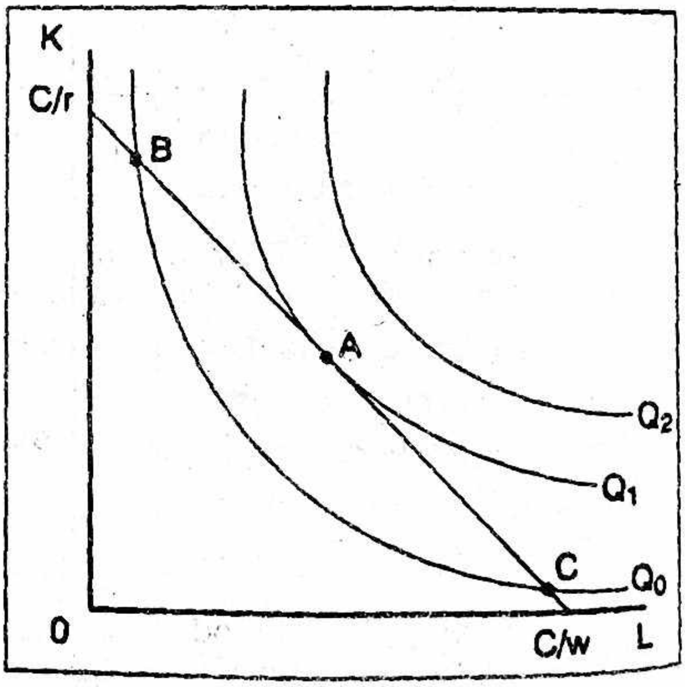


Figure 3-5 Least Cost Production

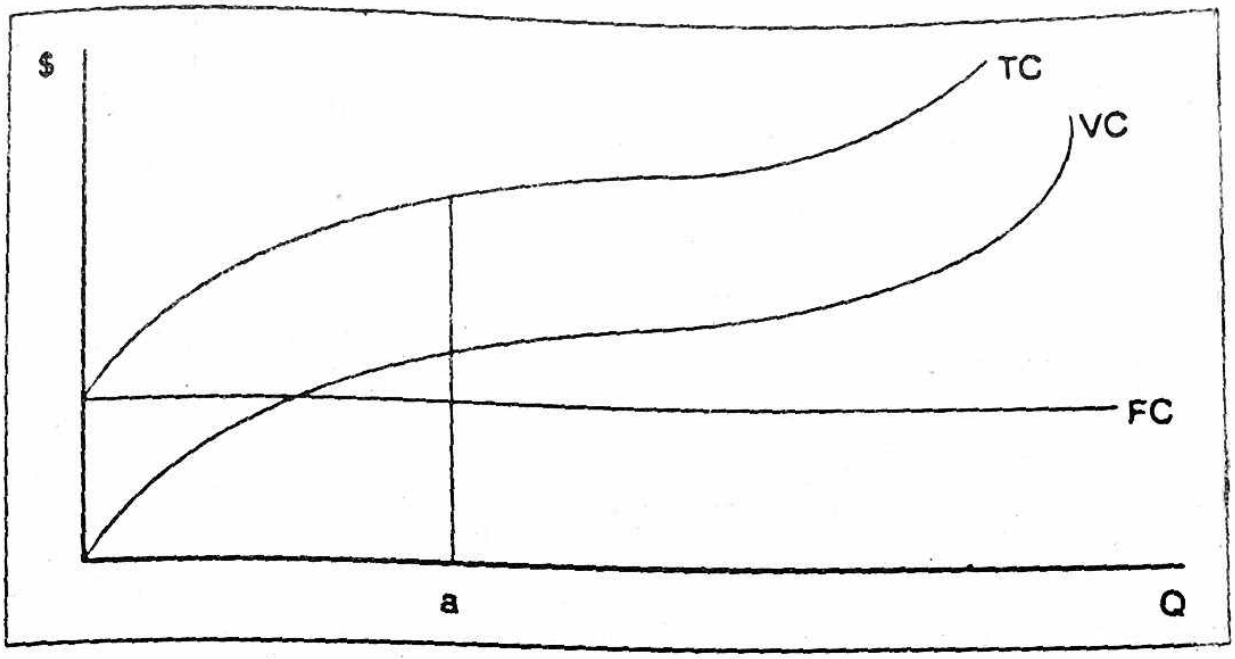


Figure 3-6 Costs of Production

Figure 3-6 shows the relationship of *TC*, *FC*, and *VC* to the level of output (*Q*). Note that the *FC* must be paid even if the plant shuts down and produces nothing, and do not change as output rises. The *VC* curve has a distinctive shape. *VC* initially rise at a decreasing rate (to output *a*), after which they rise at an increasing rate. Expansion to point *a* is associated with greater efficiency, likely resulting from specialization and division of labor. After point *a*, diminishing returns set in, leading to decreased efficiency. The *TC* curve has the same shape as *VC*, differing from it only by the level of *FC*.

A family of average cost curves can be determined. Average fixed cost (*AFC*) equals FC/Q; average variable cost (*AVC*) equals VC/Q; average total cost (*ATC*) equals TC/Q. Another important concept is marginal cost (*MC*), which measures the increase in total cost from producing one more unit ($MC = \Delta TC/\Delta Q$). Since *TC* increases only if *VC* does, *MC* also equals the increase in variable cost from producing one more unit ($MC = \Delta VC/\Delta Q$).

In Figure 3-7, *AFC* approaches the horizontal axis asymptotically. Both *AVC* and *ATC* have a distinctive U-shape. The *MC* schedule lies below both *AVC* and *ATC* when they are falling, above them when they are rising, and must intersect each at its low point.

In the long run, there are no fixed costs. The important concepts are long-run average cost (*LAC*) and long-run marginal cost (*LMC*). *LAC* measures the minimum average cost of producing any level of output, assuming the firm can build any size factory it wants for that output. *LMC* measures the increase in total cost of producing one more unit, again assuming the firm can make any adjustment desired in its factory. Refer to Figure 3-8. Each short-run average cost (*SAC*) curve represents a particular size factory, one that is most efficient in

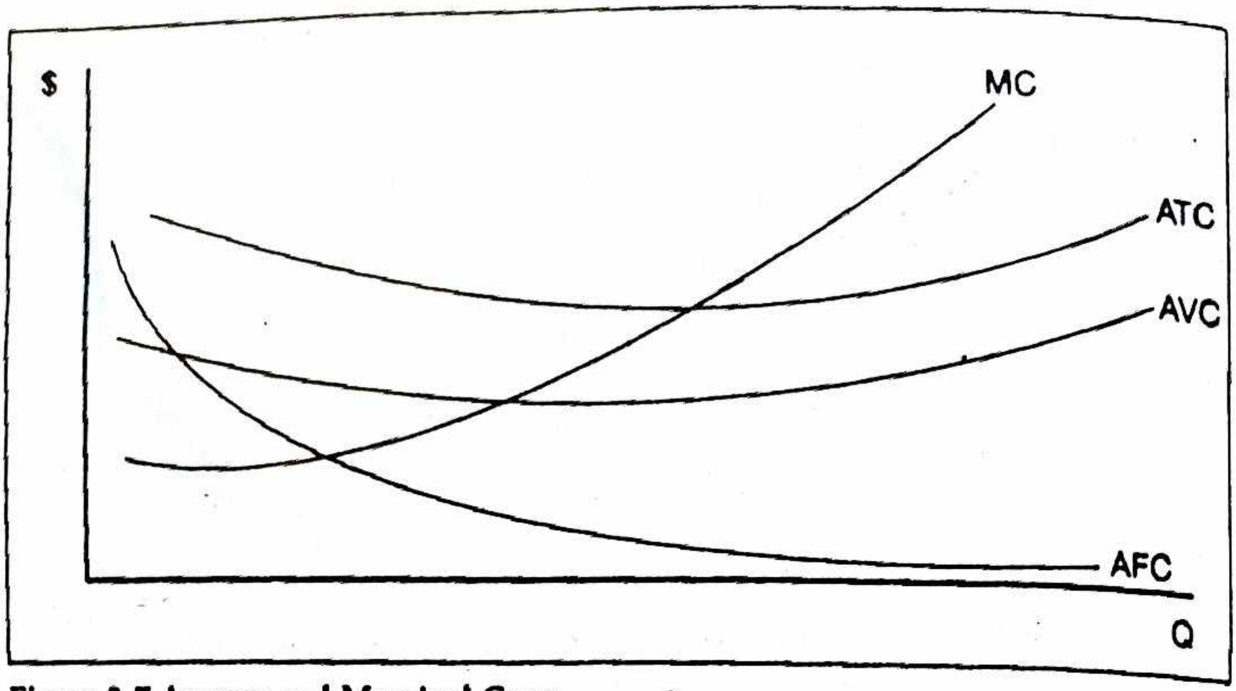


Figure 3-7 Average and Marginal Costs

producing a particular level of output. *LAC* is the "envelope" of the *SAC* curves. For example, the minimum *LAC* of producing output *a* is *b*. This can be achieved by building and operating the plant giving SAC_2. Consequently, if the plant were to increase output to *c*, its average costs would be higher (*d*) than if the firm were able to build a more efficient plant. Average costs of *e* could be achieved in the long run with a different plant (not shown). *LAC* can be considered a planning curve. After choosing an expected long-run level of output, the firm will then build the right size plant to produce that level of output at minimum cost.

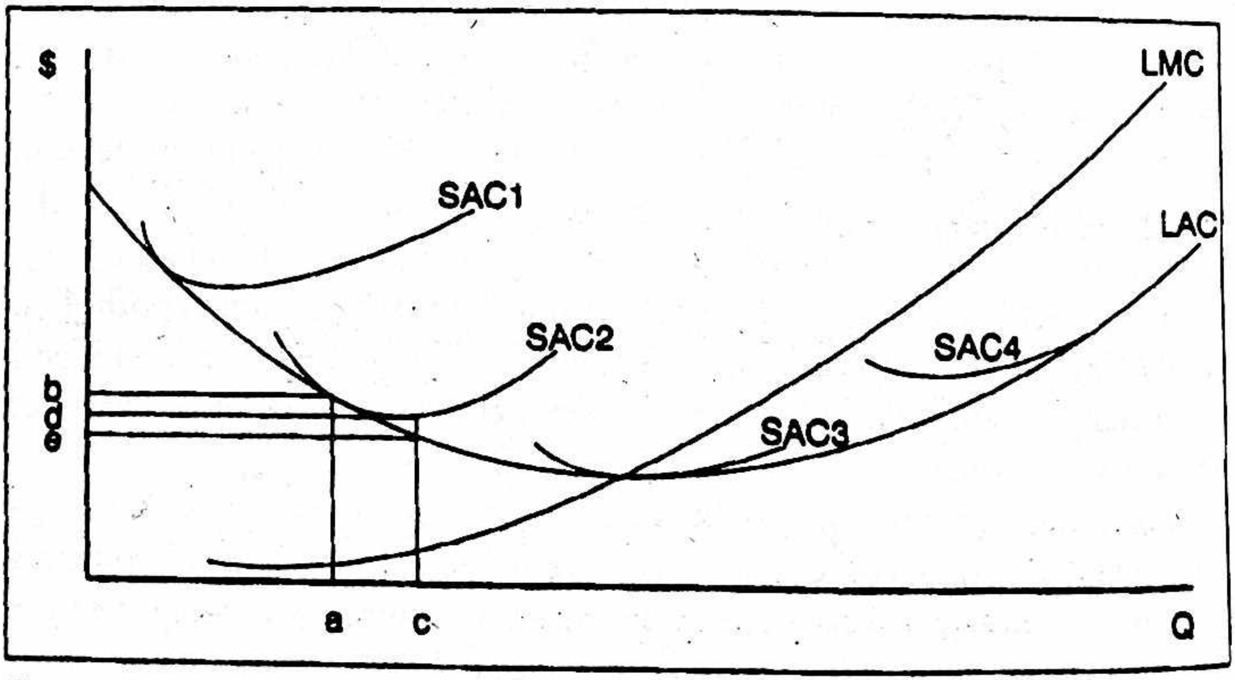


Figure 3-8 Costs in the Long Run

CHAPTER 4

PERFECT COMPETITION

Characteristics of Perfect Competition

Perfect competition comprises four qualities:

1. There are many small buyers and sellers in the market—firms are price-takers, unable to influence the price they charge.
2. Homogeneous product—each firm sells an identical product. Consumers will make purchases on the basis of price comparison only.
3. Freedom of exit and entry—there are no substantial barriers limiting the ability of firms to enter and leave the industry.
4. Perfect information—each buyer and seller has enough information to make fully informed purchase and sale decisions.

These assumptions, particularly the first and second, imply that the demand curve facing the individual firm will be horizontal at the market price. The standard interpretation of this demand curve is that the firm can sell all it wants at the market price. Another important assumption is that firms are considered to be profit-maximizers.

Short-Run Equilibrium

In the short run, firms will produce the quantity of output where the price they charge (P) will equal the marginal cost (MC) of production. Whenever $P > MC$, the firm can add to its profits by selling units that add more to its revenues (P) than to its costs (MC). When $P < MC$, additional sales add more to costs than to revenues.

Figure 4-1 is a graphic depiction of short-run equilibrium. The graph on the left represents industry demand (D) and supply (S). The intersection of the curves gives equilibrium price, which is treated as a given by the firm. The graph on the right represents a typical firm. The horizontal line is the firm's demand curve. Other curves depicted are marginal cost (MC), average variable cost

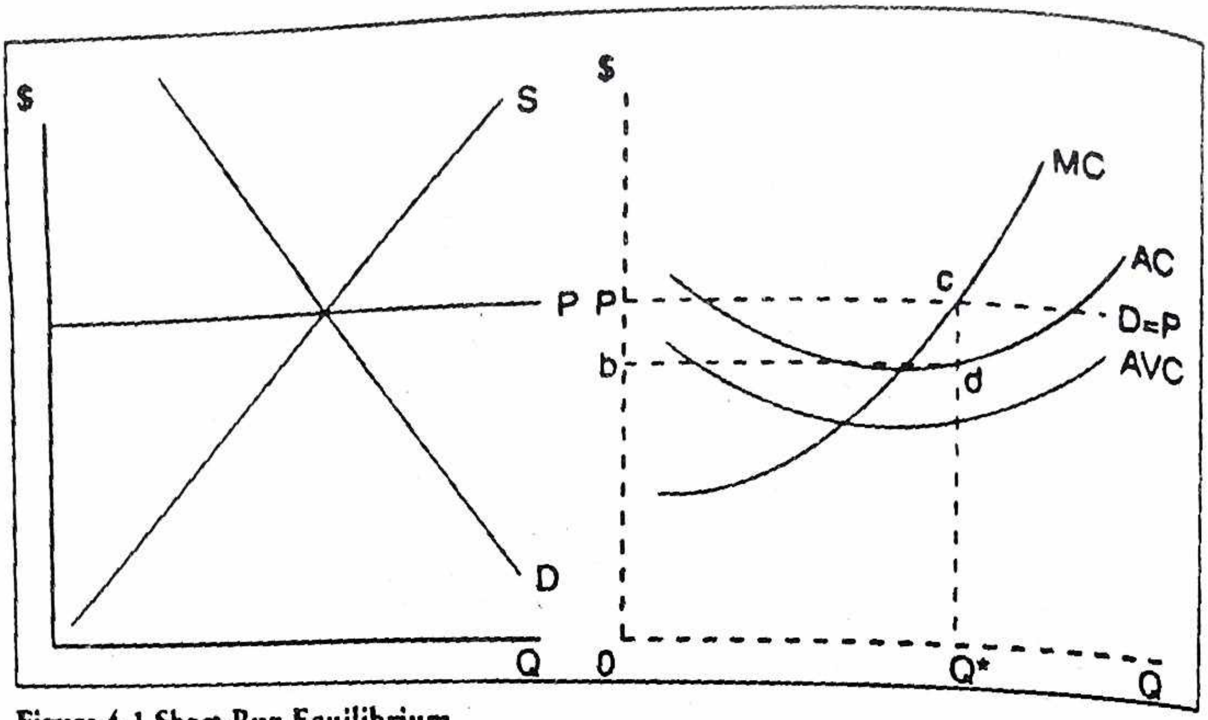


Figure 4-1 Short-Run Equilibrium

(*AVC*), and average cost (*AC*). Short-run equilibrium is at the level of output where *P* equals *MC*. The firm's total revenue is area *OPcQ**. Its total cost is area *ObdQ*. It earns an economic profit of area *bPcd*.

Short-run losses are also possible. If the firm is charging *P* greater than minimum *AVC*, but less than *AC*, the firm will continue to produce in the short run, despite the losses. The reason has to do with the distinction between fixed and variable costs. The firm must pay its fixed costs in the short run, regardless of whether it produces or not. A *P* in excess of *AVC* provides a surplus which can be used to partially offset the fixed costs.

If *P* < minimum *AVC*, the firm will shut down in the short run. If it shuts down, it must pay its fixed costs. If it produces, it must pay its fixed costs, and its failure to cover its variable costs will only add to the loss.

Where do the market demand and supply curves come from? Market demand is the horizontal summation of the individual consumer demand curves for the product. Market supply is the horizontal summation of the individual firm supply curves. Where do the individual firm supply curves come from? From the earlier discussion, if you know the price of the product (assuming *P* > minimum *AVC*), you can find the quantity the firm will supply from its *MC* curve. If *P* < minimum *AVC*, then nothing will be supplied. Consequently, the firm's supply curve is simply the segment of its *MC* curve above minimum *AVC*.

Long-Run Equilibrium

Freedom of exit from and entry into an industry is the dominant factor determining long-run equilibrium. If the industry is earning economic profits, new firms will enter the industry. These new firms will increase the supply of the product which will lower the market price. The added demand of the new firms for factors of production may raise production costs, also. One result is that economic profits will disappear. Another result is that firms will be forced to build and produce in the most efficient factories possible; to do otherwise would result in losses. Consequently, in long-run equilibrium, firms will be producing at the low point of their long-run average cost curve (see Figure 4-2).

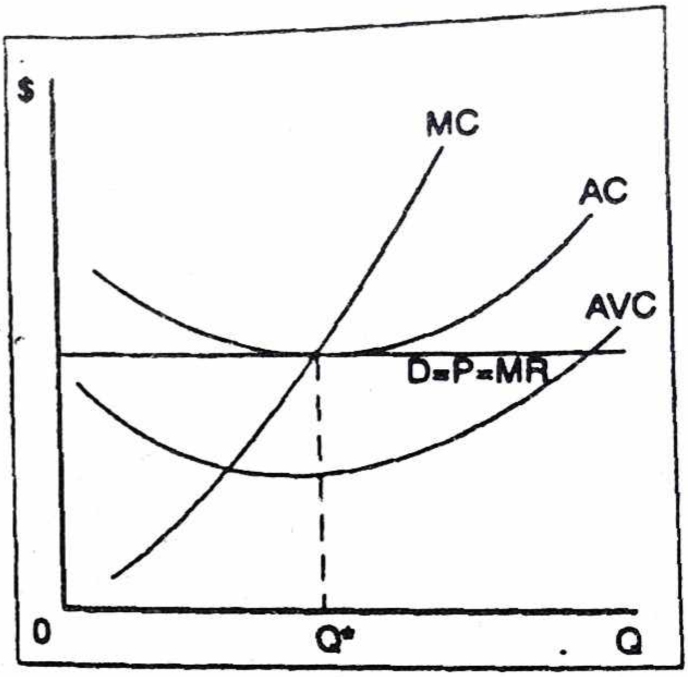


Figure 4-2 Long-Run Equilibrium

If the industry experiences losses, exit will take place. Market price will increase as the supply of the product is reduced, and production costs will fall as a result of a decreased demand for factors of production. Production at the low point of the long-run average cost curve will also occur.

Long-Run Industry Supply Curve

Assume a perfectly competitive industry in long-run equilibrium with demand curve D_0, supply curve S_0, and market price P_0. Now assume market demand increases to D_1, raising market price to P_1, and allowing a short-run

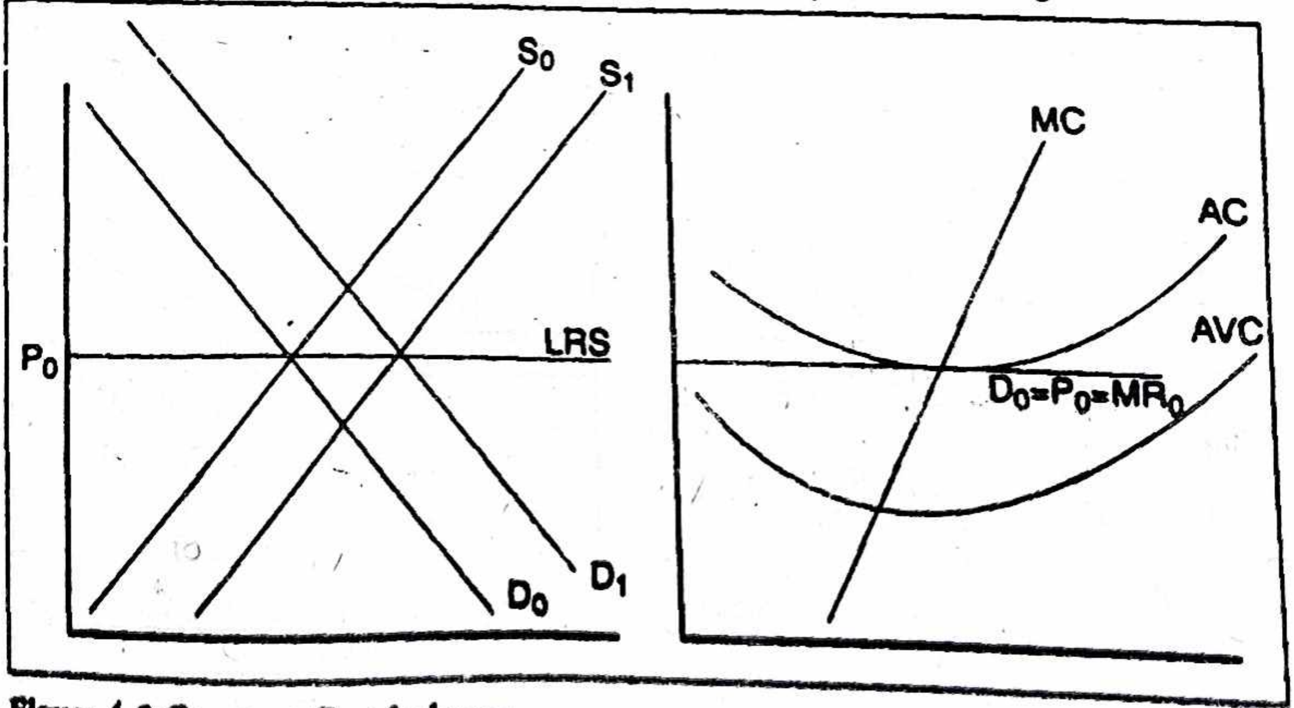


Figure 4-3 Constant-Cost Industry

profit to be earned. This will stimulate entry into the industry, increasing the supply of the product. *If entry does not affect costs of production in the industry*, the new long-run equilibrium will be at the intersection of D_1 and S_1 with price P_0. The long-run supply curve (*LRS*) will be flat and the industry will be known as a constant-cost industry (Figure 4-3).

If entry into the industry causes costs of production to rise, the industry will have a positively sloped long-run supply curve and is called an increasing cost industry (see Figure 4-4).

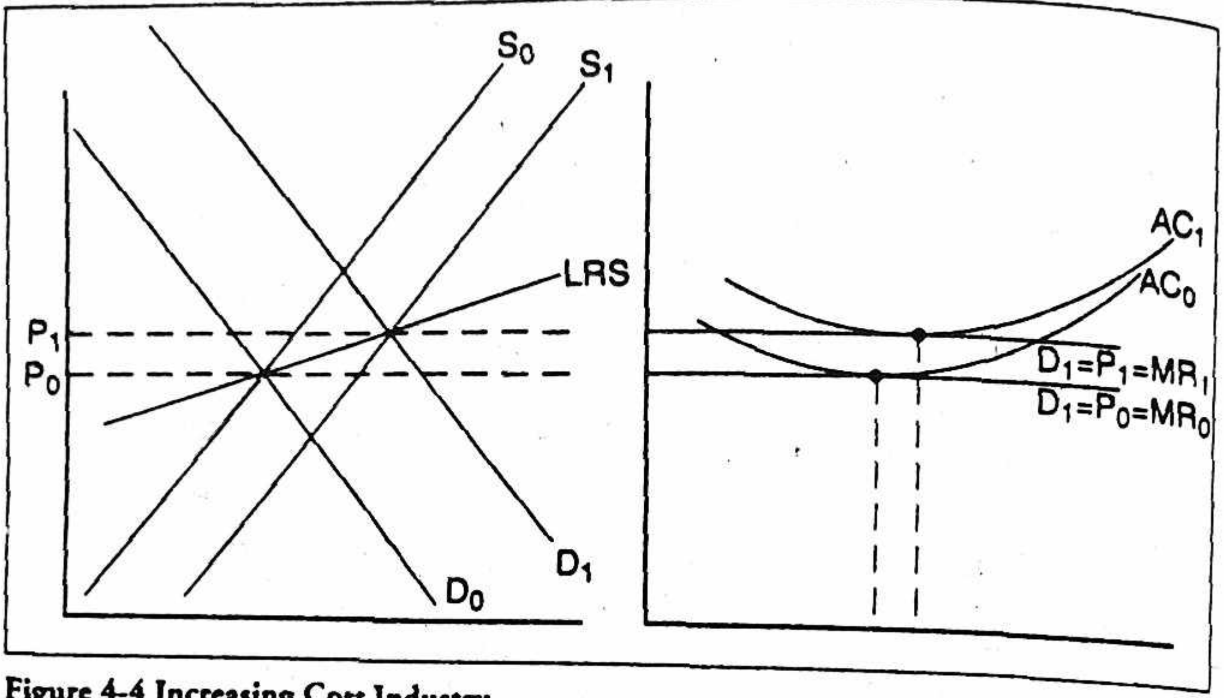


Figure 4-4 Increasing Cost Industry

If entry into the industry causes costs of production to fall (i.e., if greater purchases of inputs allow economies of scales to be achieved), the industry will have a negatively sloped long-run supply curve and is called a decreasing cost industry (see Figure 4-5).

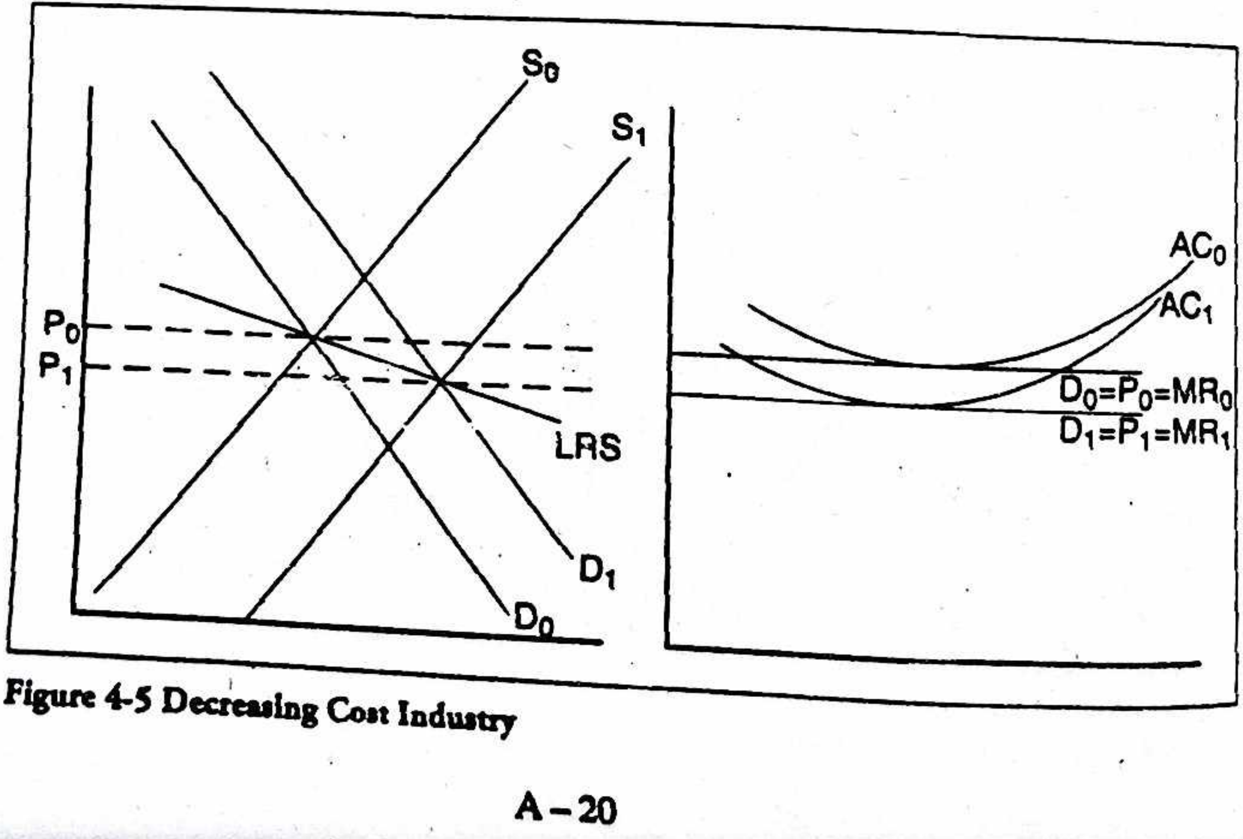


Figure 4-5 Decreasing Cost Industry

CHAPTER 5

MONOPOLY CHARACTERISTICS

A monopoly is an industry composed of a single firm selling a product for which there is no close substitute, with high barriers to entry. Because the industry comprises only a single firm, the market demand curve for the product is also the demand curve facing the industry.

Short-Run Equilibrium

In short-run equilibrium, the profit-maximizing monopolist will produce the level of output where marginal revenue (*MR*) equals marginal cost (*MC*) (see Figure 5-1). At levels of output where $MR > MC$, the firm can add to its profit by increasing output, since additional units sold will add more to revenue than to costs. If $MR < MC$, the firm will reduce output, since additional units add more to cost than to revenue.

Since the demand curve facing the firm has a negative slope, the firm's marginal revenue curve lies below it. The profit-maximizing monopolist will charge the highest price possible for the level of output produced, meaning that the price charged will exceed *MR*.

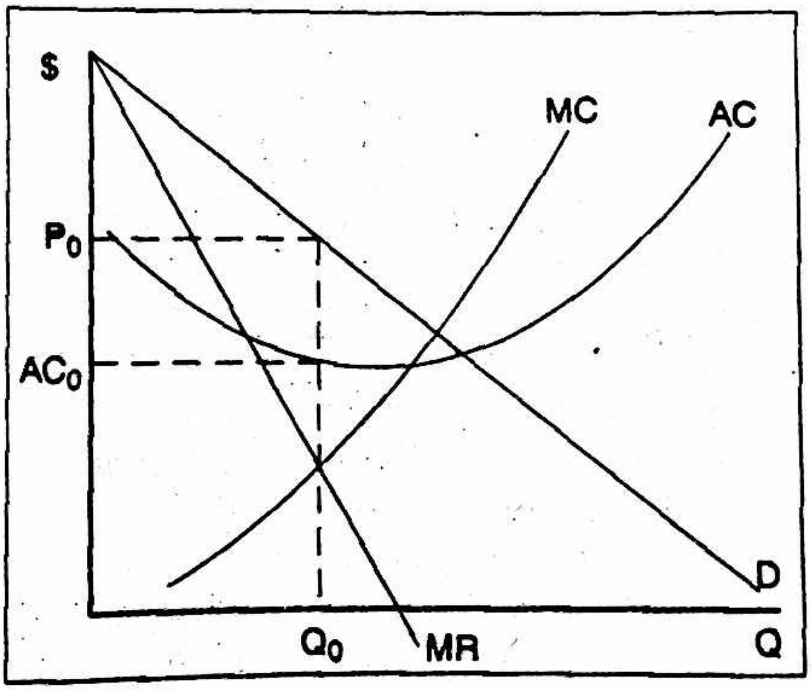


Figure 5-1 Short-Run Equilibrium

In the short run, monopolists may make an economic profit, but this is not guaranteed by any means. Short-run loss is possible. As in the case of perfect competition, the monopolist will continue to produce if losses occur as long as the price exceeds the average variable cost. The firm will shut down if the price is less than the average variable cost.

Long-Run Equilibrium

Monopolists typically do not have to worry about entry if an economic profit is being made in the long run. This means that economic profit can exist in long-run equilibrium.

Most economists consider monopoly an undesirable market structure for several reasons. For one thing, monopolists are alleged to charge too high a price and produce too small a quantity. Since $MR = MC$ in a monopoly, and the price a monopolist charges exceeds MR, the price also exceeds MC. Since the price of the product is a measure of its value to society, and its MC is a measure of the cost to society of producing additional units, additional units would provide a greater benefit to society than they would cost. However, the units will not be produced because additional units would reduce the monopolist's profit. Second, having a protected market position means that monopolists are not under constant pressure to produce as efficiently as possible. Third, monopolists can earn economic profit in the long run.

Price Discrimination

Price discrimination can occur under monopoly conditions. Price discrimination is the practice of selling a product at different prices to different people, when price differences are not justified by cost differences. There are three types of price discrimination. First-degree, or perfect, price discrimination occurs when consumers are charged the highest price they would pay for each unit of the product. Second-degree price discrimination occurs when different prices are charged for blocks of the product. Third-degree price discrimination occurs when markets are separated and different prices are charged in different markets.

Successful price discrimination will raise the profits of the discriminator, but there is a beneficial side effect for buyers. Price discrimination will lead the monopolist to produce a greater output, potentially eliminating one of the objections to monopoly stated above. Price discrimination can take place only when the firm can identify separate markets and prevent resale between the different markets.

Natural Monopoly

Natural monopolies are industries characterized by average total cost curves that decline continuously over the full range of likely output for the industry. This means that one firm can produce the output demanded by the market more efficiently than several smaller firms that each produce lesser amounts. In fact, monopoly is the only likely stable condition in such an industry. See Figure 5-2.

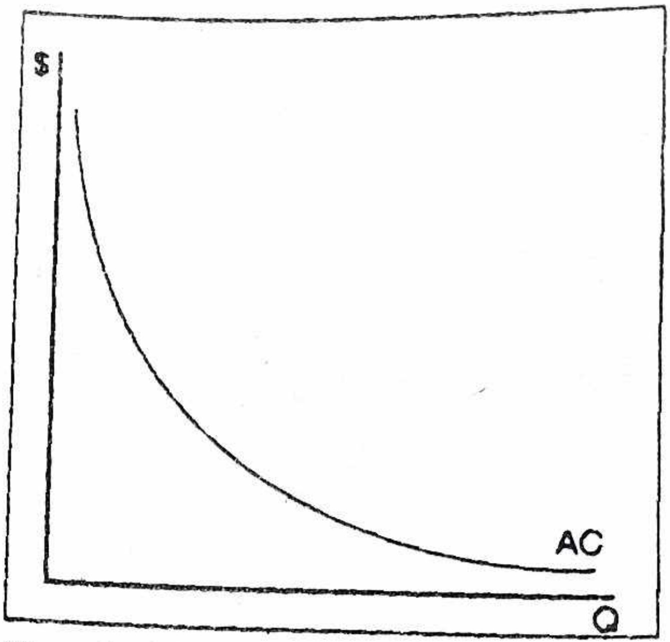


Figure 5-2 Natural Monopoly

CHAPTER 6

INDUSTRIAL ORGANIZATION

Monopolistic Competition

Monopolistic competition is an industry structure characterized by three things: a large number of firms, ease of entry and exit, and product differentiation.

Short-run equilibrium in monopolistic competition. A profit-maximizing firm will produce the output at which $MR = MC$ and charge the highest price consumers are willing to pay. In the short run, monopolistically competitive firms can earn an economic or normal profit or suffer a loss. Refer to Figure 6-1.

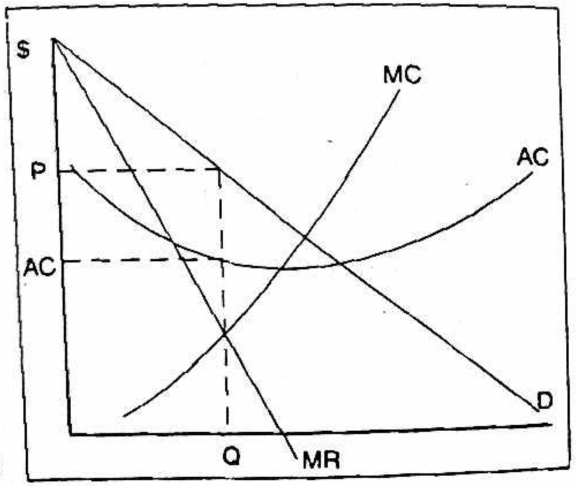


Figure 6-1 Short-Run Equilibrium

Long-run equilibrium in monopolistic competition. In this situation, firm entry or exit can occur. If a short-run profit is being earned, entry will take place. New firms will begin doing business selling slightly different products likely to appeal to some segments of the market. These new products will take away business from existing firms, causing their demand curves to shift inward. Entry will cease when economic profit reaches zero. Loss will lead to the departure of firms and a consequent increase in demand for the products of the remaining firms. Exit will cease when profit returns to the normal level.

Long-run equilibrium is depicted in Figure 6-2. There is debate among economists about the "Excess Capacity" theorem. One view is that long-run equilibrium is inefficient because there are too many firms producing too little (excess capacity), leading to higher-than-minimum average costs. In the other view, excess capacity is the desirable consequence of product differentiation; it yields more variety in our lives.

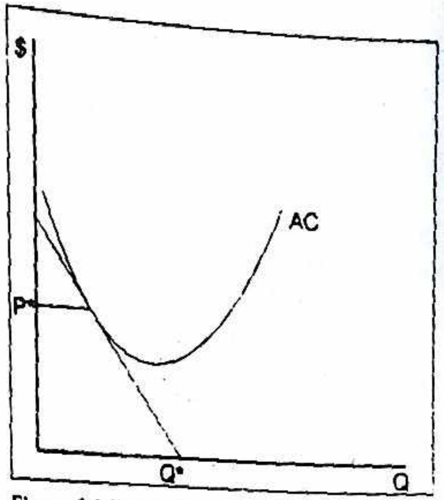


Figure 6-2 Excess Capacity

Oligopoly

An oligopoly is an industry dominated by a few very large firms in which there is "mutual dependence recognized." There are homogeneous oligopolies in which firms produce identical products, and differentiated oligopolies in which firms produce similar but slightly different products.

"Mutual dependence recognized" means that the success of the business strategy of each firm will depend on the strategies followed by all the other firms, and each firm realizes this. Consequently, each firm takes into account the expected reactions of its rivals in formulating its business strategy.

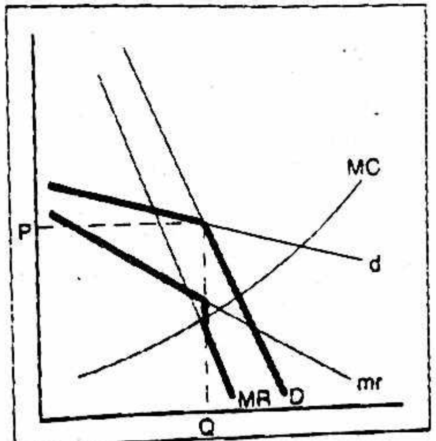


Figure 6-3 Kinked Demand Curve

Because firms recognize their mutual dependence and the small number of firms in the industry, there is the potential for collusion between market participants. When firms cooperate with each other to try to extract a monopoly profit from the public, they are practicing collusion. Collusion can be explicit or tacit, formal or informal.

One well-known oligopoly model is the kinked demand curve (see Figure 6-3). This model assumes that firms believe that rivals will match any price cuts but not price increases. This assumption results in a demand curve displaying a kink at the current price. The segment above the kink will be highly elastic; the segment below the kink will be highly inelastic. An implication of this model is that prices will tend to be inelastic over the business cycle.

The welfare implications of oligopoly are sources of controversy. Some economists believe that the structure of the industry, particularly the small number of firms, reflects the existence of economies of scale that mean few firms can produce more efficiently than many firms. Other economists emphasize the likelihood of collusion as the source of monopoly-like distortions in the industry.

Cartels

A cartel is a group of competing firms that agree to collude. The incentive to form cartels is obvious. A group has the potential to earn and share monopoly profit. What is less commonly recognized is that cartels are inherently unstable. Every member of a cartel has an incentive to cheat on the agreement. Any firm that charges a price lower than the cartel price will enjoy an enormous expansion in sales at the expense of the other cartel members. Frequently the temptation is too great, and cooperation breaks down.

Cartels work best when demand is stable or growing, entry into the industry is difficult, and there are relatively few members of the cartel.

CHAPTER 7

FACTOR MARKETS

Demand for a Variable Factor of Production in the Short Run

The demand for a variable factor of production in the short run is analyzed using the marginal productivity theory. Each unit of a factor a firm hires helps produce output that can be sold in the marketplace and contribute to the firm's revenue. If the firm sells in a perfectly competitive market, this contribution is known as the factor's value of the marginal product (*VMP*). In imperfectly competitive markets, the same concept is called marginal revenue product (*MRP*). Both *VMP* and *MRP* decline as more units of the factor are hired. The firm will hire a factor as long as the factor's contribution to the firm's revenue exceeds what the factor costs, as this will increase the firm's profits. The firm will maximize profits when the factor is hired up to the point where the price equals *VMP* or *MRP*.

Assume a firm produces output using a fixed quantity of input K and a variable quantity of input L. The first three columns of the following table show alternative quantities of L, total product (TP), and marginal product (MP). Under perfect competition, a firm can sell all the output it wants at the going price. Revenue and L's VMP can easily be calculated ($VMP = \Delta\text{Revenue} = P * MP$). Under imperfect competition, a firm can sell more only by charging a lower price. Revenue and L's MRP can easily be calculated ($MRP = \Delta\text{Revenue} = MR * MP$). If L costs \$100 per unit, the competitive firms will hire up to four units; the imperfectly competitive firms will hire up to two units.

			Perfect Competition			Imperfect Competition		
L	TP	MP	P	REVENUE	VMP	P	REVENUE	MRP
0	0	—	10	0	—	15	0	—
1	25	25	10	250	250	15	375	375
2	45	20	10	450	200	13	585	210
3	60	15	10	600	150	11	660	75
4	70	10	10	700	100	9	630	- 30
5	75	5	10	750	50	7	525	−105

For any factor price, we can determine the amount the firm will want to hire by consulting the *VMP* or *MRP* schedule; these schedules are the firm's demand curve for labor.

Labor Supply

The labor supply problem can be analyzed as a typical problem of consumer choice. The worker must decide how to allocate her scarce time (only twenty-four hours per day for everyone) between working and not working. The worker compares the reward from working with the utility of nonwork activities. The labor supply curve represents how many hours the worker would like to work at each wage rate.

In Figure 7-2, assume the worker can choose between two goods: leisure and income. The budget constraint shows the combination of the two goods the worker can consume. The slope of the constraint is $-w$, where w is the wage rate. The worker will choose the combination of leisure and income that maximizes utility. Changes in the wage rate will lead to changes in the optimal quantity of income and leisure. The slope of the labor supply curve reflects the interaction of substitution and income effects. The substitution effect is that as wages rise, it becomes more expensive not to work. This fact should encourage the laborer to work more hours. The income

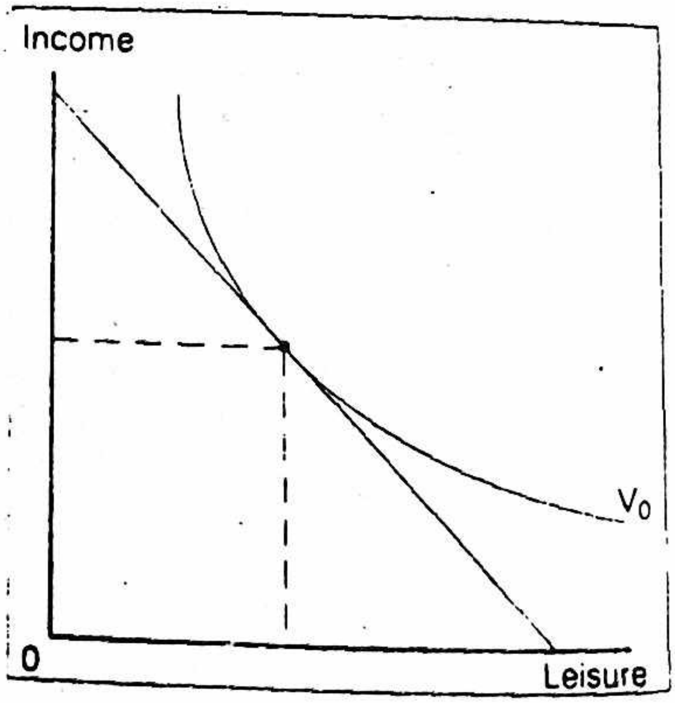


Figure 7-1 Labor Supply Choice Problem

effect is that if wages rise, the worker can work fewer hours and earn the same income. Both effects are present at all times for all workers. The stronger effect determines the slope of the labor supply curve. If the substitution effect is stronger, the labor supply curve should have a positive slope. If the income effect is stronger, the curve should have a negative slope. A "backward-bending" supply curve, one that has a positive slope at low wages but bends back and has a negative slope at higher wages, is theoretically possible.

Summing the individual labor supply curves horizontally will give the market supply curve.

Equilibrium Wages and Employment

The intersection of the relevant market demand and supply curves provides equilibrium wages and employment levels for particular occupations and industries. The standard analysis of the minimum wage postulates that the legislation creates a wage floor above the equilibrium level, resulting in a permanent surplus of labor.

Wage differentials among workers simply reflect the fact that equilibrium levels differ between markets. Markets with relatively high demand and scarce supply have higher equilibrium wage rates than markets with opposite conditions.

In the long run, wage differentials can be reduced by the mechanism of labor mobility. Labor will leave markets with low wages and enter markets with high wages, causing wage differentials to decrease. Barriers to mobility can cause wage differentials which can persist in the long run. Barriers include the cost of acquiring the skills to perform certain jobs, worker tastes (some jobs have unattractive features, such as danger or unusual hours, for which workers require higher wages), and various market imperfections such as lack of knowledge of job opportunities, discrimination, and reluctance to leave familiar surroundings.

Rent

Rent is payment for a factor input in excess of its transfer cost. Transfer cost is an opportunity cost—the price a factor could command in its next best opportunity. A factor will not be made available for use in any particular activity unless it receives a payment at least equal to what it can get from some other activity (payments must be adjusted for other compensating factors).

The term "rent" is frequently used in connection with land. To put it simply, land is fixed in supply (there is a vertical supply curve at the quantity of land available). Consequently, its transfer cost can be considered zero. The demand for land will establish its market price which is considered pure rent (see Figure 7-3).

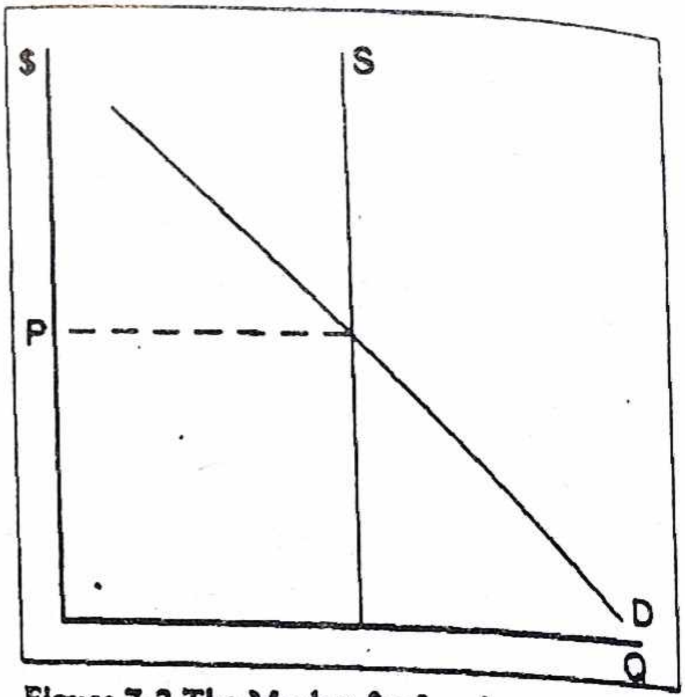


Figure 7-2 The Market for Land

Interest Rate

The interest rate is determined in the loanable funds market. As you can see in Figure 7-4, the demand for funds (demand for borrowed money) reflects the productivity of investment (what the funds will be used to purchase). Diminishing marginal productivity of investment implies that people will not demand additional funds unless the interest rate falls.

The supply of funds reflects individual time preferences. Time preference measures how consumers value present consumption relative to future consumption. The rate of time preference is the additional future consumption required to compensate the consumer for foregoing consumption in the present, expressed as a percentage of the foregone consumption. If a consumer would be willing to forego \$1.00 in consumption now for \$1.10 in consumption in one year, the consumer's rate of time preference is (\$1.10 – \$1.00)/\$1.00 = 10%. The positive slope of the curve shows that a higher reward in terms of interest is required to induce consumers to forego additional amounts of current consumption (i.e., save and lend). The intersection of the two curves gives the equilibrium rate of interest.

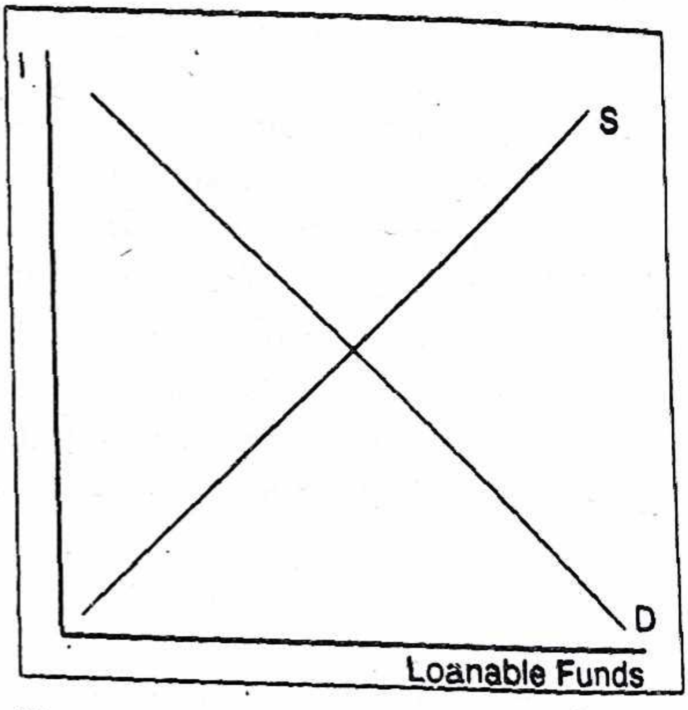


Figure 7-3 The Market for Loanable Funds

Profit

A normal profit is defined as a return equal to what an investment could earn in its next best alternative. In a sense, it can be considered a payment to the entrepreneurial function of managing and directing the other factors of production.

An economic profit is a return in excess of a normal profit. The source of economic profit is an issue of some controversy. One view is that economic profit is the result of temporary disequilibrium situations, a reward for innovation, or a compensation for risk. In each case, profit is a necessary part of the economic system serving either to guide resources into their most productive uses or to compensate for necessary activities. The other view sees economic profit primarily as the return extracted by someone with the good fortune of having a monopoly position.

Present Value

Present value of Y_1 dollars received in one year:

$PV = Y_1/(1 + i)$, where i is the discount rate.

Present value of Y_2 dollars received in two years:

$PV = Y_2/(1 + i)^2$.

Present value of Y_n dollars received in n years:

$PV = Y_n/ (1 + i)^n$.

Present value of a stream on income received over n years:

$PV = Y_1/(1 + i) + Y_2/(1 + i)^2 + \ldots + Y_n/(1 + i)^n$.

CHAPTER 8

EXTERNALITIES

Market transactions typically affect more people than just the buyer and seller. For example, A's production of a product that he sells to B may cause the air that everyone else breathes to be polluted. C's purchase of a vaccination from Dr. D may reduce the probability of many other people catching a communicable disease. If the market price of a commodity does not include an allowance for the costs imposed on or benefits realized by other people, an externality exists. Externalities are a problem because if a market price does not reflect all the costs or benefits of a commodity, either too much or too little of a commodity may be produced.

Negative Externalities

Refer to Figure 8-1. Let *MR* be a firm's marginal revenue curve for a certain commodity. Let *MPC* be marginal private costs, the costs the firm is legally obligated to pay (wages, utilities, interest, etc.). Assume the production process yields pollutants that are emitted into the air. Let *MD* be marginal damage, a measure of the harm imposed on the environment and people. *MSC* is marginal social cost, the full cost to society of producing the commodity. $MSC = MPC + MD$.

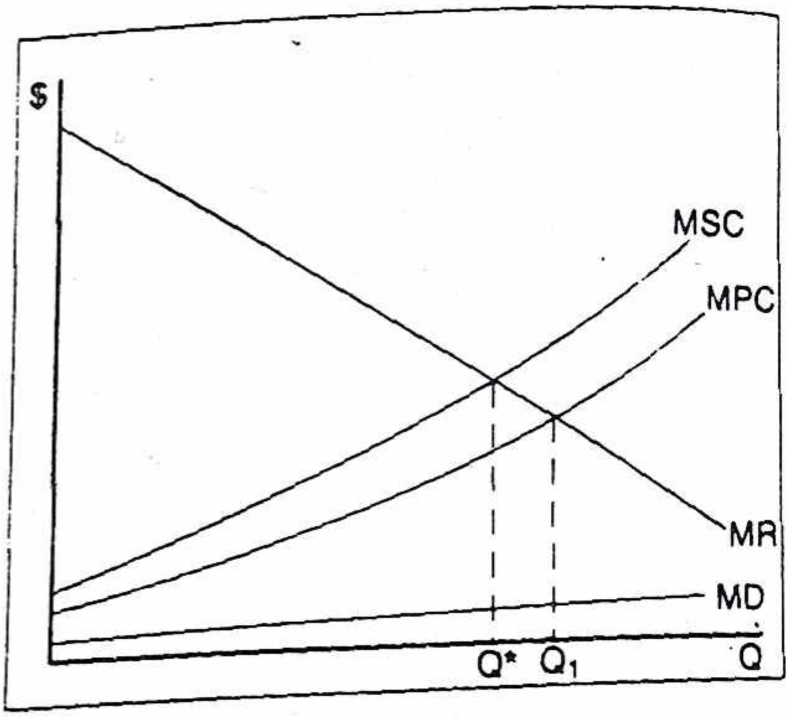


Figure 8-1 Negative Externalities

If the firm does not have to pay the cost of environmental damage, it will produce Q_1 where $MR = MPC$. This is a negative externality situation because the market price of the commodity will not reflect the damage to the environment, and, consequently, too much of the commodity will be demanded and produced. If the firm does have to pay the cost of environmental damage, it will produce Q^* where MR = MSC. This is the efficient output from the standpoint of society.

Positive Externalities

Looking at Figure 8-2, let *MPB* be the consumer's marginal private benefit curve for a particular commodity, say a vaccination. *MC* is the marginal cost of the shot. *MB* is the marginal benefit to the rest of society of the consumer's vaccination. Society benefits because if the consumer is vaccinated, she will be less likely to contract and transmit contagious diseases to others. *MSB*, or marginal social benefit, is the sum of the benefit to the consumer and everyone else: $MSB = MPB + MB$.

If the consumer is not compensated for the benefit she creates for society, she will consume Q_1 shots where $MPB = MC$. This is a positive externality situation because the market price of the commodity does not reflect the benefit the vaccinations give the rest of society; consequently, too few vaccinations will be demanded and produced. If the consumer is compensated for the benefit she creates, then she will consume Q^* shots where $MSB = MC$. This is an efficient quantity from the standpoint of society.

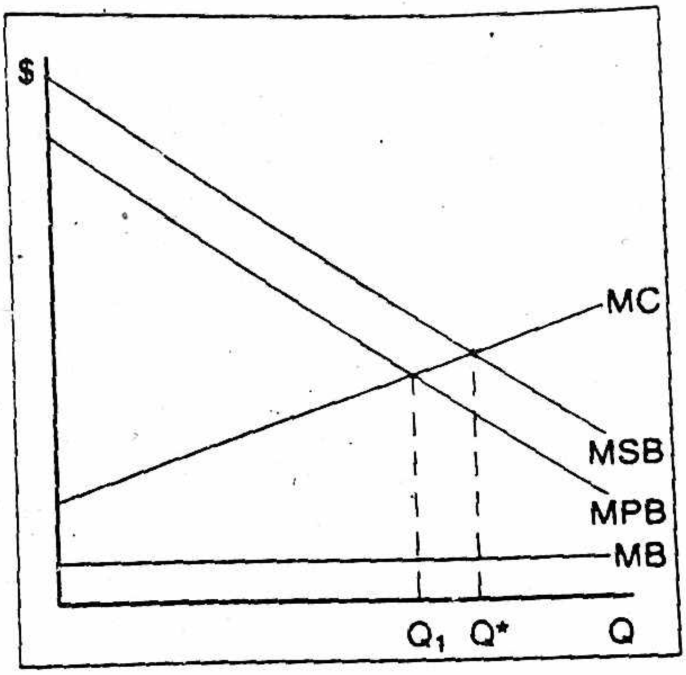


Figure 8-2 Positive Externalities

Pigouvian Taxes and Subsidies

According to British economist A. C. Pigou, one solution to the problem of externalities is to "internalize" them with taxes and subsidies. A tax on the polluting firm equal to the environmental damage its production causes will raise *MPC* so that the firm will choose to produce an efficient quantity. A less obvious fact is that a subsidy to the polluting firm will also yield the same result. If the firm is given a payment for each unit not produced, then actual production will incur *MPC* plus the opportunity cost of the subsidy not collected. If the subsidy is calibrated correctly, the *MPC* curve can be raised to the level of *MSC*, leading to an efficient level of output.

Likewise in the positive externality case, a subsidy to the consumer for each shot received or a tax for each shot not received will raise the *MPB* curve such that the efficient quantity of output will be produced.

The practical problems of calculating social costs and benefits are ignored in this analysis.

The Coase Theorem

Economist Ronald Coase has come up with an unusual conclusion regarding air pollution. Air is a common property resource; everyone is considered to own the air, everyone can use it freely. What if one person were given private property rights over the air? Then a firm could not pollute unless it enters into a contract with the owner of the air. A firm would be willing to pay for the use of the air (right to pollute) if the profit it could earn by producing exceeded the cost of using the air. The owner of the air would allow it to be used if the payment received exceeded the damage caused by pollution. Mutually beneficial bargains exist at any output less than Q^*. Bargaining leads to the optimal quantity of output being produced without any need for government action.

What if a firm were given the property rights to the air? The firm would produce Q_1 unless induced to reduce production. The firm would reduce production if the compensation offered was greater than the profit foregone. Society would be happy to offer any compensation less than the damage caused by the pollution. Mutually beneficial bargains exist at any output greater than Q^*. Bargaining leads to the optimal quantity of output being produced without any need for government action.

The Coase theorem holds that government action will not always be needed to resolve problems created by externalities. Private bargaining is sometimes adequate. The question of who has the property rights is irrelevant from the standpoint of achieving an efficient allocation of resources. *For the Coase theorem to work, the transaction costs associated with reaching agreements cannot be prohibitive.* Also, the theorem ignores income distribution effects of the assignment of property rights.

Regulation

Regulation is frequently proposed as a solution to externality problems. While regulation is the only practical solution in some cases, it is not always the most efficient solution. Assume firms *A* and *B* in Figure 8-3 have different marginal costs of pollution cleanup. Regulation may require that both firms reduce pollution by *R*. It is easily shown that if firm *B* reduces pollution by *R* + *d* and firm *A* reduces by *R* – *d*, the same total pollution reduction can be achieved at a lower cost. The cost incurred by *B* for each unit of production from *R* to *R* + *d* is less than the costs saved by *A* for each decrease in pollution reduction from *R* to *R* – *d*.

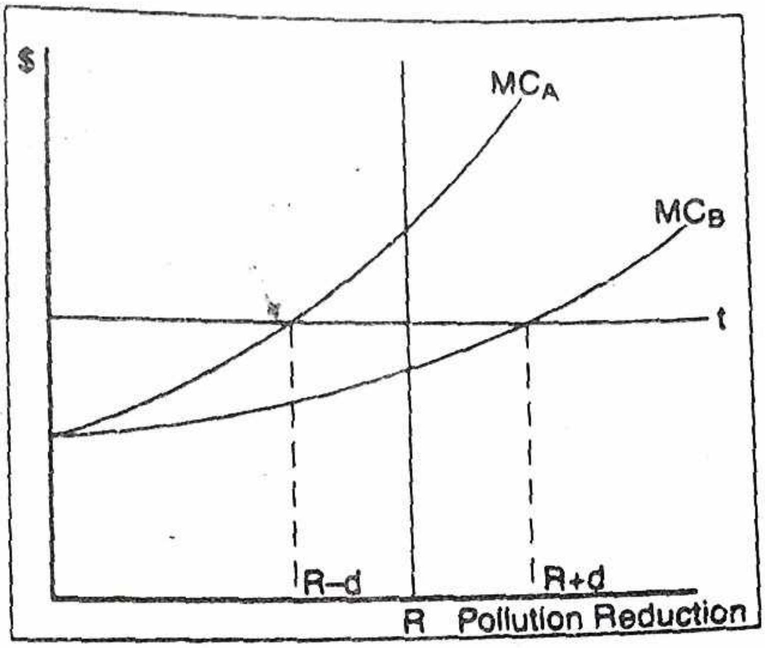


Figure 8-3 Costs of Pollution Cleanup

The efficient result can be achieved by reliance on prices. If each firm is charged *t* for each unit of pollution produced, the firms would reduce pollution as long as the cost of doing so was less than *t*. *A* would reduce pollution *R* – *d*; *B* would reduce *R* + *d*.

CHAPTER 9

PUBLIC ECONOMICS

Public Goods

Public goods and services are defined by two characteristics:

1. **Nonrivalry** - The amount of an item that one person consumes does not reduce the amount available for others to consume.
2. **Nonexclusion** - People who do not pay for a good cannot be prevented from consuming it.

National defense is the classic example. It is nonrival because the protection I get does not diminish the protection you can receive. It is nonexclusive because once a system of national defense is in place, everyone is protected, even if they have not made financial contributions. Contrast this to a typical private good, say an apple. It is a rival good because if I take a bite from the apple there is less left for you to eat. It is an exclusive good because only those who have purchased the item have the right to consume it. Being a public good is a matter of degree. Few goods fit both characteristics perfectly.

Demand for a Public Good. Referring to Figure 9-1, let D_s and D_m be demand curves for Sam and Mary, respectively. In the case of a private good, the market demand curve is the horizontal summation of the individual demand curves. If the good is public, the individual demand curves are added vertically. At each quantity, say Q_s, the amount Sam and Mary are willing to pay (P_0 and P_1, respec-

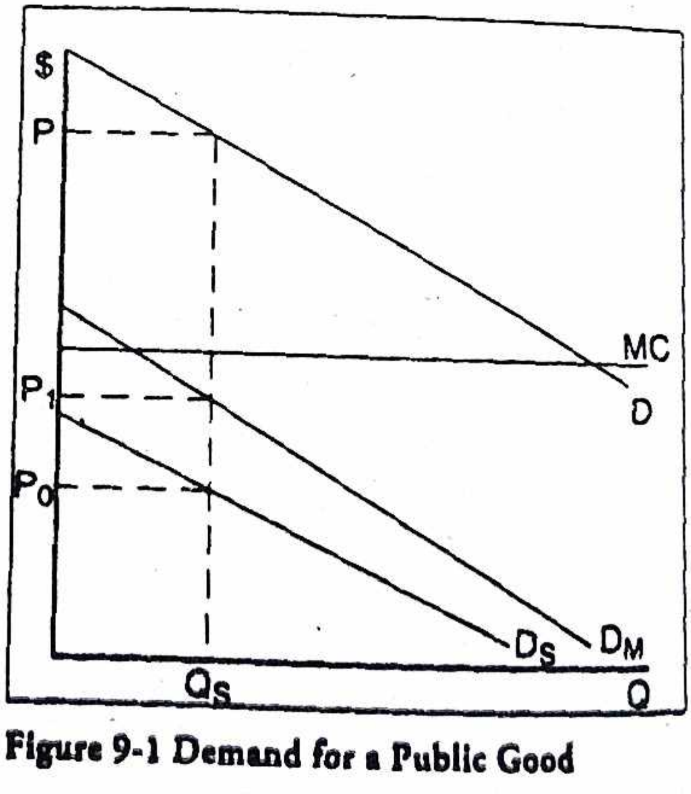


Figure 9-1 Demand for a Public Good

tively) can be determined and added together, giving the value of that quantity of the good in the market ($P_0 + P_1$). The market demand curve is D.

If marginal cost of production is given by MC, the optimal quantity of the good is found at the intersection of D and MC. From a practical standpoint, it is difficult to establish the optimal supply of a public good because every citizen has an incentive to understate how much he would be willing to pay for it (he might be asked to do so!).

Tax Analysis

Two leading issues in the analysis of taxation are incidence and **excess burden.**

Tax Incidence—Partial Equilibrium Analysis of a unit tax on a commodity. Let D_0 and S_0 (see Figure 9-2) be demand and supply curves for a commodity prior to the imposition of any tax. In equilibrium, for each unit the buyer pays P_0 and the seller receives P_0.

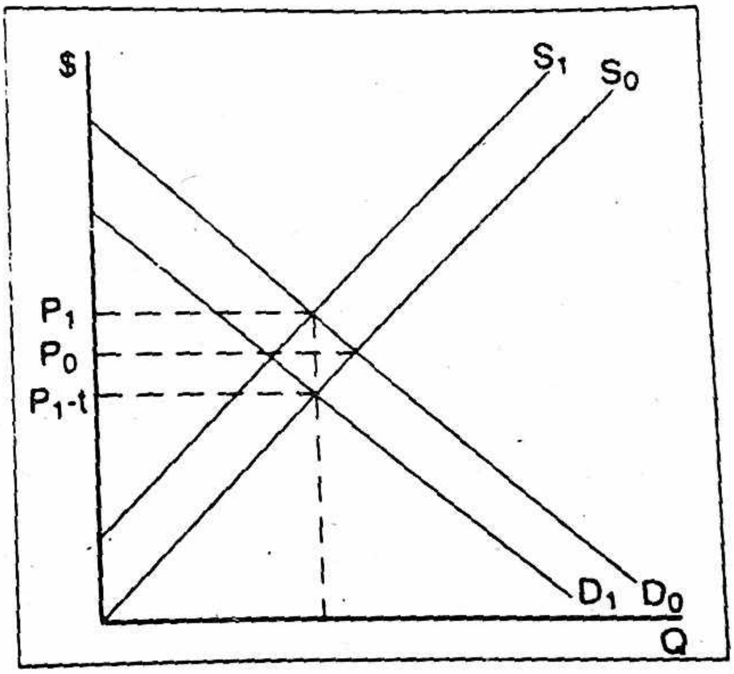


Figure 9-2 Tax Incidence

Assume a tax of t per unit is enacted with **statutory incidence** on the seller. The tax will raise the seller's supply curve vertically by t units to S_1. For each unit in the new equilibrium the buyer pays P_1, which is more than before but not t more. The seller will get P_1 but is forced to send t to the government, netting $P_1 - t$, which is less than before but not t less. The **economic incidence** of the tax is shared by both buyer and seller. *The economic incidence of a tax depends on the elasticities of demand and supply for the product.* The less elastic the demand curve is (do the above analysis with a steeper demand curve) and the more elastic the supply curve is (do the above analysis with a flatter supply curve), the greater the tax will be that consumers must bear.

What if the statutory incidence of the tax had been on the consumer? D_0 represents the prices consumers pay; D_1 represents the prices sellers receive. D_1 is shifted down vertically t units from D_0. The supply curve remains at S_0. In the new equilibrium, buyers pay P_1 and sellers receive $P_1 - t$. *The economic incidence of a unit tax is independent of whether the statutory incidence is on the buyer or seller.*

Excess Burden—Demand and Supply Analysis. Assume the demand curve for some commodity is given by D in Figure 9-3. In the absence of a tax, equilibrium price is P_0 and consumers purchase Q_0 units. Consumers receive consumer surplus of dP_0c. Assume a tax is imposed, raising price to P_1 and causing consumers to reduce purchases to Q_1. Consumer surplus is reduced to dP_1a, meaning consumers have lost P_1P_0ca. However, P_1P_0ba of that is not a net loss to society because it measures higher revenues to government. The remaining area, abc, sometimes called the "welfare loss triangle," is a net loss to society and is the excess burden of taxation.

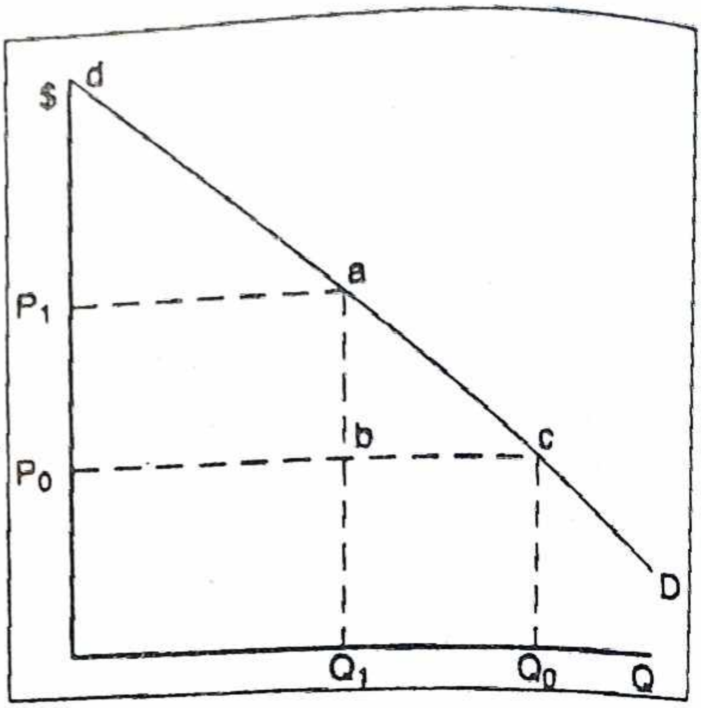


Figure 9-3 Excess Burden I

Excess Burden—Indifference Curve Analysis. Assume the consumer can purchase two goods, X and Y, and has budget constraint AC (see Figure 9-4). In equilibrium, point B on indifference curve U_0 will be selected. Now assume a tax is imposed on X, resulting in an increase in the price of that good. The budget constraint will rotate to AI and the consumer will find a new equilibrium at point D on indifference curve U_1.

How much worse off is the consumer? This can be determined by computing the equivalent variation, the amount the consumer's income would have to be reduced to decrease her utility from U_0 to U_1. Shift AC in parallel to itself until it is just tangent to U_1. This leads to equilibrium at point J and an equivalent variation of KJ. (Before the tax the consumer could consume OC units of X and OA units of Y. After the tax, the con-

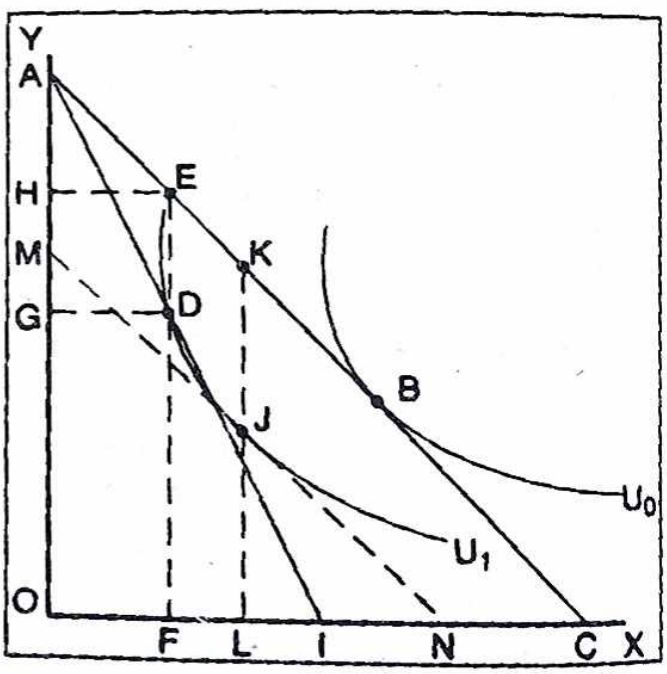


Figure 9-4 Excess Burden II

sumer could consume *ON* units of *X* and only *OM* units of *Y*.) The income loss is equivalent to *MA* (= *KJ*) units of *Y*.

Of course, some of the consumer's loss is offset by the government's revenue gain. The gain in revenue is *GH* (= *ED*). (Pretax, the consumer could have *OF* units of *X* and *OH* units of *Y*. Posttax, the consumer could have *OF* units of *X* but only *OG* units of *Y*, meaning *GH* must have gone to the government.) It can be seen that the consumer's loss is greater than the government's gain. Consequently, taxes are an excess burden.

The only tax without an excess burden is a **lump sum tax.** On the graph, a lump sum tax would shift the budget constraint in parallel to itself. It is a simple matter to show that the equivalent variation to the consumer is equal to the revenue gain to the government.

The Deficit

The key issue regarding government budget deficits is the "burden of the debt.".

Crowding Out. A deficit allows the current generation to consume more (either private or public goods) than it otherwise could. To finance this spending, government must compete with private borrowers in the capital markets. This competition raises interest rates and "crowds out" private borrowers who cannot afford the steeper terms. The result is less private capital, which will retard economic growth. The next generation will inherit an economy that is less productive than it otherwise might have been.

Crowding In. This analysis says that deficit spending is a desirable policy while the economy is in recession. The spending will stimulate the economy, create jobs, and raise purchasing power, creating the conditions for more private investment.

Ricardian Equivalence. Economist Robert Barro has argued that the current generation is concerned with the welfare of future generations. Current deficits will cause this generation to increase its saving so as to have more to bequeath to the future generation—to offset the higher tax payments the future generation will have to make on account of the debts they will also inherit. Consequently, neither generation benefits or loses from deficit spending, and fiscal policy in general is impotent.

Public Choice

Some important concepts from public choice theory follow.

Rational Ignorance. Obtaining information on political matters and voting are likely to involve various costs (time, money, convenience, etc.). Since few elections are decided by a single vote, the benefit to any individual of being an educated voter is likely to be quite small. Consequently, some may opt to remain ignorant and not participate in the democratic process.

The Voting Paradox. Assume the preferences of three voters faced with three choices are as shown in the table below. If majority voting is used to decide between any two choices, the following results will be observed. A will beat B, B will beat C, but, contrary to what would seem a reasonable outcome, C could beat A. This paradoxical result occurs when no single choice can command a majority of the vote. In such a situation, the order of voting on pairs of the choices determines the outcome.

	Choices		
Voter	A	B	C
Jones	1	3	2
Smith	2	1	3
Doe	3	2	1

Arrow's Impossibility Theorem. Kenneth Arrow has shown that no collective decision-making rule can guarantee results that are not unfair or paradoxical.

Median Voter Theorem. If voters always prefer policies that most closely match their preferred policy, the result of majority voting is that the policy preferred by the median voter will always prevail. The implication is that vote-maximizing candidates or parties always have an incentive to move to the "middle-of-the-road."

Inefficiency of Majority Voting and Logrolling. In the table, proposals *X* and *Y* are each to be voted up or down by majority voting. On the basis of total benefits and costs to society, *X* ought to win and *Y* lose, but *X* will lose two to three and *Y* will win three to two. If *A* agrees to vote against *Y* in exchange for *E*'s vote in favor of *X*, both individuals and society will be better off. However, it is also easy to construct examples where logrolling will lead to the enaction of undesirable policies.

	Proposal X		Proposal Y	
Individual	Benefits	Tax Cost	Benefits	Tax Cost
A	$ 800	$ 400	$ 450	$ 400
B	650	400	575	400
C	325	400	425	400
D	325	400	125	400
E	300	400	125	400
Total	$2,400	$2,000	$1,700	$2,000

Special Interest Groups. In a democracy, special interest groups may be able to yield disproportionate power. Consider a policy (e.g., a tariff) that may benefit a small group in society (e.g., a protected industry) at the expense of the rest of society (e.g., consumers). If the gains to the members of the special interest groups are large (e.g., protection of a job or profits) while the individual losses to the rest of society are small (e.g., a few cents added to the cost of a product), the special interest groups have a greater incentive to fight hard for the benefit than the rest of society does to resist.

CHAPTER 10

GENERAL EQUILIBRIUM

General equilibrium analysis is used to derive the conditions under which an economy can achieve a **Pareto efficient** allocation of resources.

Exchange Efficiency

In our example, a simple economy consists of two individuals, John and Mary, who have available a fixed supply of two goods, apples and oranges. Figure 10-1 shows an Edgeworth Box. The width of the box measures the fixed quantity of apples; the height is the fixed quantity of oranges. Point *A* in the box represents the initial distribution of the goods between John and Mary. John consumes *Ox* apples, leaving *O'y* apples for Mary. Mary consumes *O'z* oranges, leaving *Ow* oranges for John.

John's indifference curves are labeled with *J*'s. Higher numbered curves represent higher levels of utility. Mary's curves are labeled with *M*'s, with higher numbers likewise representing higher levels of utility.

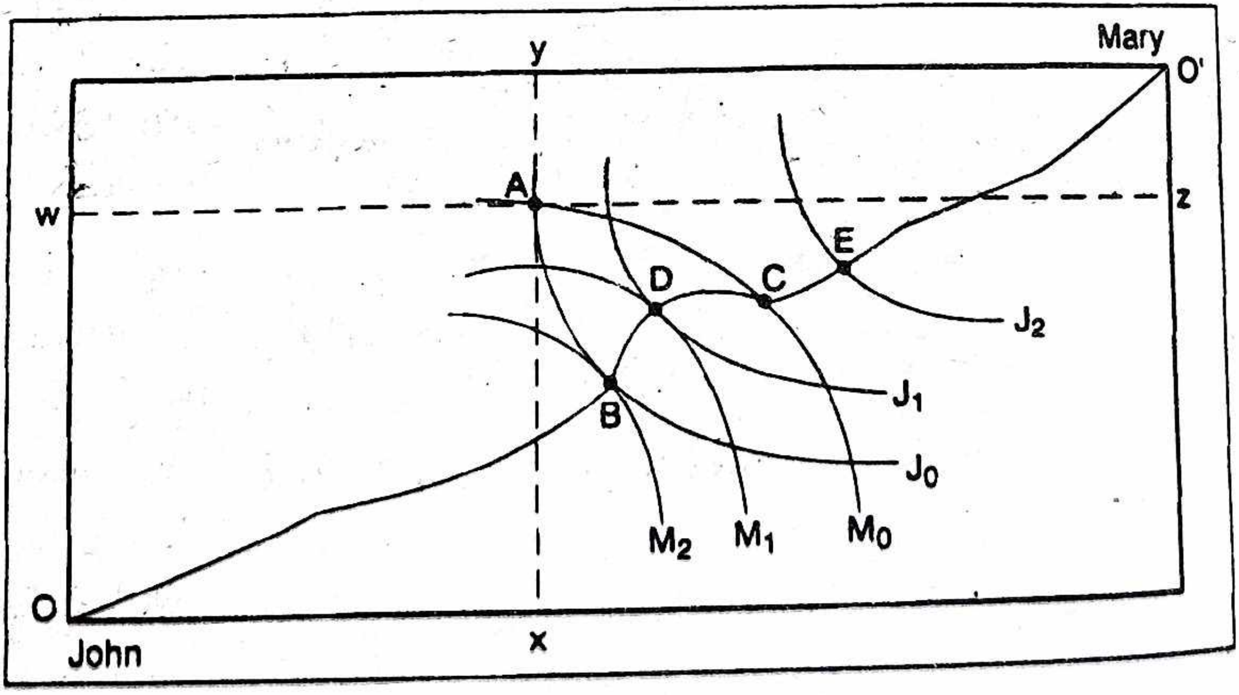


Figure 10-1 Edgeworth Box

Assume the initial distribution of apples and oranges is indicated by point *A*. Is the allocation of goods Pareto efficient? Compare *A* to *B*. At *B* John is no worse off, but Mary is better off. A movement to *B* (caused by Mary trading apples to John for oranges) is a **Pareto improvement.** A movement to *C* from *A* is also a Pareto improvement since John is made better off but Mary is no worse off. A movement from *A* to *D* is a Pareto improvement too, since both end up better off. Which point the parties move to cannot be determined without knowing the bargaining abilities of the two individuals.

Note that *B*, *C*, and *D* are each points of Pareto efficiency. At each point no movement could be made that improves the position of one individual without harming the other.

Note that at *A*, the indifference curves cross.

This means $MRS^{John}_{ao} \neq MRS^{Mary}_{ao}$. For example, assume $MRS^{John}_{ao} = 2$ and $MRS^{Mary}_{ao} = 1$. This means John is willing to trade as many as two oranges to get one apple while Mary will take as few as one orange in exchange for one apple. The possibility of mutually beneficial trade exists. At any Pareto efficient point $MRS^{John}_{ao} = MRS^{Mary}_{ao}$.

The line connecting *O* and *O'* is the contract curve. It connects all points of Pareto efficiency. Note there are an infinite number of Pareto efficient points. Also, the initial distribution of goods limits where the final distribution will be. An initial distribution at *A* limits the final distribution to points along the contract curve between *B* and *C*. Point *E*, even if society judges it a more equitable distribution, is not a possibility.

Production Efficiency

Allow production so that society can vary the amounts of apples and oranges. Figure 10-2 shows a production possibilities curve for apples and oranges. The absolute value of the slope of the curve at any point is the marginal rate of transformation of apples for oranges (MRT_{ao}). The MRT_{ao} shows how much production of oranges must be reduced to permit another unit of apples to be produced.

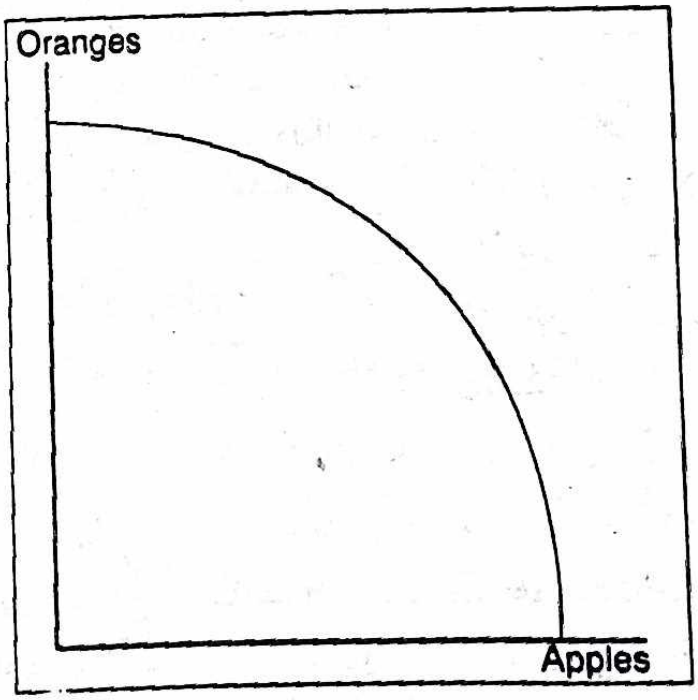


Figure 10-2 Production Possibilities Curve

With production, the necessary condition for Pareto efficiency is expanded to $MRT_{ao} = MRS_{ao}^{John} = MRS_{ao}^{Mary}$. To prove that, assume the condition does not hold. For example, let $MRT_{ao} = 4$ while both John and Mary's $MRS_{ao} = 1$. Then if apple production is reduced by one, four more oranges could be produced. If the apple is taken from John, he could be compensated with just one orange. The additional three oranges could be divided between John and Mary, making both better off. When the condition does not hold, Pareto efficiency has not been achieved.

Choosing Among Pareto Efficient Points

As established earlier, there are an infinite number of Pareto efficient points. Plot every combination of John and Mary's utility from the contract curve in Figure 10-1 on the graph in Figure 10-3. This yields a utility possibilities frontier (U). Choosing the best distribution of utilities requires some way for society to weigh the utilities of its citizens. A social welfare function posits that the well-being of society depends on the utilities of the people who make up society: $W = F(U^{John}, U^{Mary})$. Figure 10-3 also includes social indifference curves. The optimum distribution of utilities is determined at the point of tangency between a social indifference curve and the utility possibilities frontier.

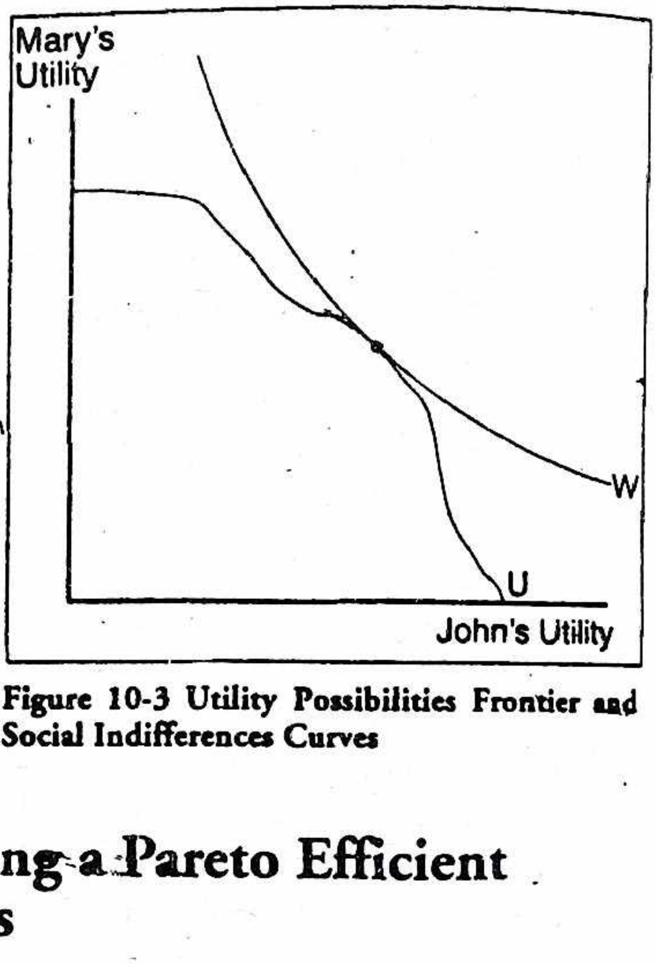


Figure 10-3 Utility Possibilities Frontier and Social Indifferences Curves

Conditions for Achieving a Pareto Efficient Allocation of Resources

$MRT_{ao} = MC_a/MC_o$, MC stands for marginal cost of production. Since rational consumers will consume the combination of goods where $MRS_{ao} = P_a/P_o$, Pareto efficiency requires $\frac{MC_a}{MC_o} = MRT_{ao} = MRS_{ao}^{John} = MRS_{ao}^{Mary} = \frac{P_a}{P_o}$, or $\frac{MC_a}{MC_o} = \frac{P_a}{P_o}$. This later condition is the equilibrium condition obtained under perfect competition. Where perfect competition exists, the economy is capable of achieving a Pareto efficient allocation of resources. Remember that a Pareto efficient allocation of resources can be achieved with any distribution of income; Pareto efficiency does not ensure equity.

Conditions for Market Failure

Conditions which interfere with the attainment of Pareto efficiency are:

1. Monopoly (see Chapter 5)
2. Public Goods (see Chapter 9)
3. Externalities (see Chapter 8)
4. Costly Information. The attainment of Pareto efficiency requires that consumers and producers make well-informed decisions based on adequate information that is readily available.
5. Nonexistence of Markets. Markets for certain goods and services may not come into existence because of **adverse selection** or **moral hazard.**

CHAPTER 11

POVERTY, INEQUALITY, AND LABOR UNIONS

Poverty

In 1990, 13.5 percent of the American population was considered to be living in poverty using the "absolute" standard known as the "poverty line." The poverty line is an income threshold. In 1990 the threshold was $13,359 for a family of four, and is adjusted for family size. It increases over time by the rate of inflation.

The poverty line is supposed to mark the lowest acceptable standard of living, but cannot be considered a scientifically valid measure. The poverty line is primarily an arbitrary delineation between acceptable and nonacceptable living standards; its chief virtue is that it has been consistently applied for many years so we can follow the trend in poverty.

Inequality

A fundamental criticism of the use of an absolute standard to measure poverty is that it does not really reflect the way society views the problem. Consider the following points. A family of four with a real income of $13,358 would be counted as poor in the United States, but would not be considered poor in Ethiopia (one of the poorest nations on earth). The same family would also not have been considered poor if it had lived in the United States of two centuries ago. This fact suggests that the definition of poverty depends on society's general standard of living. A family is poor if its income does not keep up with the incomes of the rest of society, almost regardless of how high its income is in absolute terms.

This implies that the level of income inequality determines the poverty line..A society with a more equal distribution of income will have less severe poverty than the same society with a less equal income distribution, if everything else is equal.

The Lorenz curve is a commonly used graphic device to represent the degree of income inequality. The diagram is constructed by ranking the units under consideration (families, households, etc.) from poorest to richest and dividing into equal proportional groups, such as **quintiles** or **deciles.** Refer to Figure 11-1. The bottom horizontal axis plots the population of units from poorest (on the left) to richest (on the right). The left vertical axis plots the cumulative distribution of income, the proportion of total income received by each group and all poorer groups. For example, curve *A* shows that the poorest twenty percent of the units received five percent of all the income, the poorest forty percent received fifteen percent of the income (the five percent) of the poorest quintile plus the ten percent of the next quintile), and so on.

The degree of inequality is represented by how "bowed-out" the curve is from the diagonal. Curve *B* represents greater inequality than curve *A*. A curve lying along the diagonal represents perfect equality, since each quintile receives the same proportion of the income. A curve lying along the bottom horizontal and right vertical represents perfect inequality, since one unit receives all the income.

Labor Unions

Labor unions perform a number of services for their members. Primarily, they represent workers in their dealings with employers. Many people feel that bargaining power between worker and employer is unequal, that individual workers cannot possibly bargain on even terms with their employers. By bringing workers together in one organization, bargaining power can be equalized. Better wages and working conditions often result. Unions are able to achieve

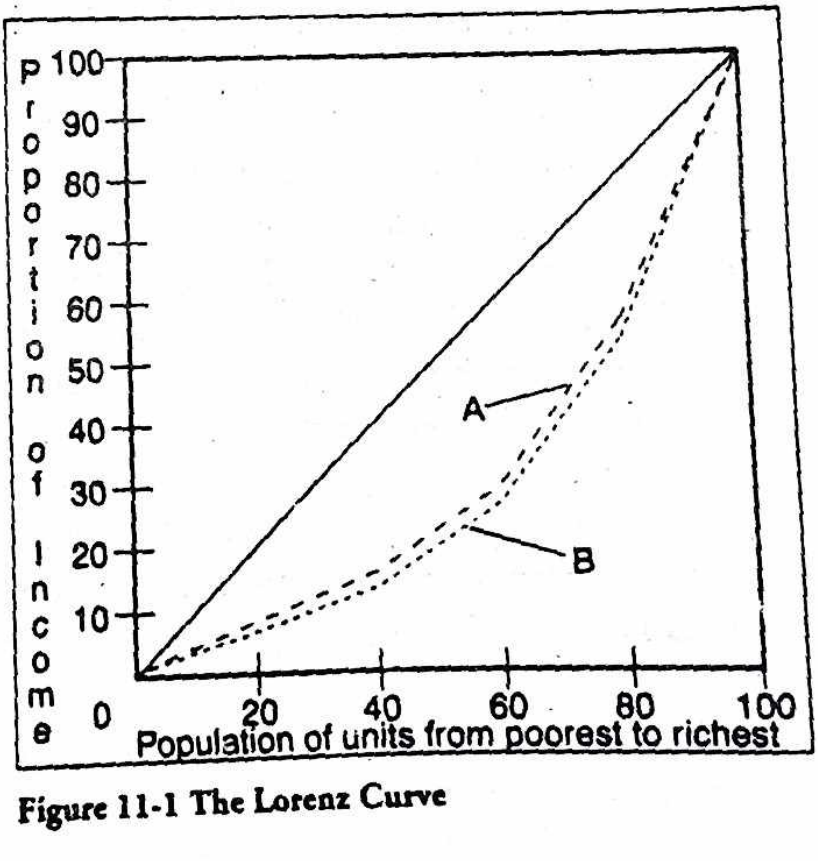


Figure 11-1 The Lorenz Curve

these goals through collective bargaining over a contract that covers employment conditions at the firm. Unions act as the voice of workers during contract negotiations, and frequently processes grievances for workers.

Unions also act as the political representatives of the workers' interests. Unions engage in election campaign activities and lobbying. Unions provide social support for workers as well, through such offerings as Christmas parties and scholarship funds for workers' children, and provide a sense of solidarity with other individuals in similar circumstances.

Craft unions join together workers who possess the same industrial skill (e.g., electricians). These unions derive their power from their control of the supply of a vital resource. Industrial unions join together all workers in the same industry (e.g., auto workers), regardless of their skill. The power of an industrial union comes from its ability to control the entire labor supply of an industry.

Except in certain pockets of industry where economic conditions were favorable, the development of a strong labor movement in the United States required the passage of protective legislation. The most important piece of legislation was the Wagner Act. This act, passed in 1935, made it public policy to support the development of unions by protecting the organization activities of workers and unions, and requiring employers to bargain in "good faith" with the representatives of their employees.

After growing rapidly in the three decades following the enactment of the Wagner Act, the union movement in America has undergone a period of contraction since the 1970s. While changes in the geographic, industrial, and occupational structure of industry, coupled with the demographic characteristics of the labor force, may have played a role in this contraction, some commentators believe an employer counteroffensive and lax enforcement of the protective laws may be more important explanatory factors.

Economists are divided on the impact of unions on the economy. While the evidence is clear that unions tend to improve wages and working conditions for their members, side effects of union activities are more controversial. Economists using conventional analysis conclude that union gains come at the expense of other workers. In addition, union activities hurt national productivity and may impart an inflationary bias to the economy. Other economists point to evidence that union gains come at the expense of profits, not other workers; these economists believe that unions have a net positive impact on productivity and are not the cause of inflationary pressures.

CHAPTER 12

MACROECONOMIC STATISTICS

Gross National Product

The expenditure and income approaches are equivalent ways of measuring gross national product (GNP) because all the money spent by each sector of the economy must be allocated to one of the seven components of income or expense.

Components of GNP, 1988
(in billions of dollars)

Expenditure Approach	
Personal Consumption Expenditures	$3,227.50
Gross Private Domestic Investment	766.50
Government Purchases of Goods and Services	964.90
Net Exports	-94.60
	$4,864.30

Income Approach	
Compensation of Employees	$2,904.70
Proprietor's Income	324.50
Rent	13.40
Corporate Profits	328.10
Interest	391.50
Capital Consumption Allowance	512.40
Indirect Business Taxes	389.70
	$4,864.30

Other Measures of Income

Net National Product	$4,357.90
–Indirect Business Taxes	–389.70
National Income	$3,968.20
–Income Earned but not Received	–1,164.30
+Income Received but not Earned	+1,258.20
Personal Income	$4,062.10
–Personal Taxes	–590.30
Disposable Income	$3,471.80

Nominal versus Real Values

A nation's GNP is measured by adding the market values of all the final goods and services produced. The monetary value of the output is used because it is necessary to have a common unit by which to measure disparate goods. It is impossible to add ten bushels of apples and thirty crates of oranges, but we can add $60 of apples and $100 of oranges.

Nominal GNP. Nominal GNP (also known as current-dollar GNP or money GNP) is computed by using the current year's market price for each product. For example, nominal GNP in 1989 is computed using the formula $GNP^{89} = P_1^{89} * Q_1^{89} + P_2^{89} * Q_2^{89} + \dots + P_n^{89} * Q_n^{89}$, where the subscripts refer to goods and services produced, and the superscripts refer to the year. Use of nominal GNP can create problems when comparing GNP across time. Consider GNP^{89} compared to GNP^{80}:

$$GNP^{80} = P_1^{80} * Q_1^{80} + P_2^{80} * Q_2^{80} + \dots + P_n^{80} * Q_n^{80}$$

$$GNP^{89} = P_1^{89} * Q_1^{89} + P_2^{89} * Q_2^{89} + \dots + P_n^{89} * Q_n^{89}$$

Presumably, the purpose of GNP comparisons is to see whether GNP has grown, or, more exactly, whether the economy's output of goods and services (the Q's) has increased. Yet GNP could have grown between 1980 and 1989 due solely to increases in prices (the P's).

Real GNP. Real GNP (also known as constant-dollar GNP) is computed using the market prices from a selected base year. For example, assume 1980 is the base year. The GNP is computed for every year using 1980 prices.

$$GNP^{80} = P_1^{80} * Q_1^{80} + P_2^{80} * Q_2^{80} + \ldots + P_n^{80} * Q_n^{80}$$

$$GNP^{89} = P_1^{80} * Q_1^{89} + P_2^{80} * Q_2^{89} + \ldots + P_n^{80} * Q_n^{89}$$

Real GNP facilitates comparisons of GNP across years. If a common set of prices is used, GNP will appear to have grown only if the actual output of goods and services (the Q's) has increased.

Example:

	Bread			Soda Pop			
	P	Q	PQ	P	Q	PQ	GNP
Nominal^{80}	2.00	150	300	1.00	500	500	800
Nominal^{89}	2.20	200	440	1.10	600	660	1,100
Real^{89}	2.00	200	400	1.00	600	600	1,000

GNP Deflator. The GNP deflator is a measure of the average price level in a given (base) year, and always has the value 100. The deflator for earlier and later years is proportionately scaled up or down based on the percentage change in the average price level. For example, if the deflator was 108 in the year after the base year, the average level of prices would have risen by eight percent. GNP Deflator^{XX} = (Nominal GNP^{XX}/Real GNP^{XX}) * 100. Using the data from the table: GNP Deflator^{89} = (1,100/1,000) * 100 = 110.

The GNP deflator can be used to "deflate" nominal GNP data into real terms. Real GNP^{XX} = (Nominal GNP^{XX}/GNP Deflator^{XX}) * 100. Using the data from the table: Real GNP^{89} = (1,100/110) * 100 = 1,000.

Employment and Unemployment

Consult the glossary for definitions of the following terms: **Employment, Employment Rate, Full Employment, Unemployment, Unemployment Rate, Natural Rate of Unemployment, Frictional Unemployment, Structural Unemployment, Cyclical Unemployment, Labor Force, Labor Force Participation Rate, and Discouraged Workers.**

Measuring Inflation

Consumer Price Index. Sometimes called the Cost of Living Index, the Consumer Price Index (CPI) attempts to measure the cost of living for a typical family. The initial step in constructing the CPI is to define a "market basket" of goods and services. The market basket contains the quantity and types of goods and services that a typical family purchases over a given period of time. The cost of the market basket can be computed at different points in time. Changes in the cost of the market basket reflect changes in the cost of living. Typically, the cost of the market basket is expressed in price index terms. The cost is given the arbitrary value of 100 in the arbitrarily chosen base year. The index is then scaled up or down proportionately in earlier or later periods of time. In the table, the market basket consists of 50 loaves of bread and 100 bottles of soda pop. In year 1, the goods cost $2 per loaf and $1 per bottle, respectively, for a total cost of $200. In year 2, the prices of both products and, consequently, the price of the market basket, rise. The new market basket cost of $215 is 7.5 percent greater than in year 1 [($215 – $200)/$200 = .075]. We therefore conclude that the cost of living rose 7.5 percent between year 1 and year 2.

	Year 1		Year 2	
	P	Cost	P	Cost
50 loaves bread	2.00	100.00	2.10	105.00
100 bottles soda	1.00	100.00	1.10	110.00
		200.00		215.00

Constructing the Consumer Price Index

In index number terms, if we let the $200 cost in year 1 be represented by 100, then the $215 will be represented by 107.5. The price index for year 2 can be found by solving a ratio problem. Year 2/Year 1 = $215/$200 = X/100, where *X* is the unknown index number for year 2 and 100 is the base year index.

One use of the CPI is to "deflate" nominal consumer incomes into their equivalent in purchasing power. Purchasing Power of Income = (Nominal Income/CPI) * 100. For example, assume a consumer's nominal income was $30,000 in year 1, our base year. Because it is the base year, the $30,000 is taken to have a purchasing power of $30,000 [($30,000/100) * 100]. Assume the consumer's income rises to $34,000 in year 2. Does this necessarily mean the consumer's purchasing power has risen by $4,000, or 13.34 percent? Can the consumer buy 13.34 percent more goods and services than she did in year 1? If prices rose between the two years, then the answer must be no. In the table, the nominal income in year 2 has a purchasing power of $31,627.91 [($34,000/107.5) * 100], which is only 5.43 percent greater than in year 1. This means that $34,000 in year 2 is a *real* increase of only $1,627.91 over $30,000 in year 1 due to higher prices in year 2 (inflation).

Problems with the CPI

1. The index is strictly valid only for the "typical family," one whose consumption exactly matches the market basket. Families consuming more of commodities whose prices have risen at more than the average increase will experience a relative increase in their cost of living.
2. The index does not take into account the fact that people will alter their market basket in response to changes in prices, allowing them to achieve the same level of utility at lower cost.
3. The market basket is not adjusted for changes in the quality of products. Some price increases may simply reflect that the product is of higher quality.
4. The market basket is not continually altered to take into account the introduction of new products.

Redistribution of Income and Wealth. While income in the aggregate must keep pace with inflation (if inflation causes buyers to pay ten percent more for products, the same inflation will cause sellers to receive ten percent more income); the income of some people will lag behind—causing redistribution of purchasing power.

The box shows how unanticipated inflation can redistribute wealth from lenders (creditors) to borrowers (debtors). The lender loses because she was repaid with money that has less purchasing power than she expected to receive, and the borrower gained because the cost of borrowing (in terms of purchasing power) was less than expected.

Box 1

	No Inflation			Inflation		
	Nominal Amount	Purchasing Power	Price Index	Nominal Amount	Purchasing Power	Price Index
lent, beginning of year	$100.00	$100.00	100	$100.00	$100.00	100
repaid, end of year	$105.00	$105.00	100	$105.00	$ 95.45	105

Lenders can protect themselves by correctly anticipating the rate of inflation and adding that rate to the rate of interest charged. As Box 2 shows, charging fifteen percent interest would allow the lender to receive back the approximate amount of purchasing power she had initially expected. Assuming the debtor also anticipated ten percent inflation, she would not resist paying a fifteen percent interest rate because the terms of the loan would be no different than what she had agreed to with no inflation.

Inefficiencies. Inflation can lead to inefficiency, which can reduce both the national output and the rate of real growth. The uncertainty engendered in inflationary environments may disrupt long-term planning and investment. Another problem is that the pattern of investment frequently moves from productive uses to those that are less productive, but which may be good inflation hedges. A third problem of inflation is that it causes people to pay inordinate attention to their financial affairs, robbing themselves of time that could be used more productively.

Box 2

Lender charges 15% interest

	Nominal Amount	Purchasing Power	Price Index
lent, beginning of year	$100.00	$100.00	100
repaid, end of year	$115.00	$104.55	110

CHAPTER 13

MACROECONOMIC THEORY

The Income-Expenditure Model

The income-expenditure model incorporates the idea that "demand creates its own supply." Consequently, the level of spending, or aggregate expenditure (AE), is the major focus. Much analysis is directed toward the levels of the various types of spending: $AE = C + I + G + (X - M)$, where C is consumption, I is investment, G is government spending, and $(X - M)$ is net exports (X is exports and M is imports).

Consumption Spending. Let C be given by the linear equation $C = a_0 + a_1 Y$, where a_0 and a_1 are parameters. The average propensity to consume (APC) is defined as the proportion of income consumed, and is given by the following expression: $APC = C/Y = a_0/Y + a_1$. The marginal propensity to consume (MPC) is defined as the proportion of additional income consumed, and is given by the following expression: $MPC = \Delta C/\Delta Y = a_1$.

Saving (S) is equal to $Y - C$, $S = -a_0 + (1 - a_1)Y$. The average propensity to save (APS) is defined as the proportion of income saved, and is given by the following expression: $APS = S/Y = -a_0/Y + (1 + a_1)$. The marginal propensity to save (MPS) is defined as the proportion of additional income saved, and given by the following expression: $MPS = \Delta S/\Delta Y = (1 - a_1)$.

Equilibrium, The following cases are illustrative applications of the income-expenditure model.

In equilibrium AE is just equal to GNP. If I, G, and $(X - M)$ are assumed to be **autonomous**, then a simple income expenditure model is given by the following two structural equations:

$$C = a_0 + a_1 Y \qquad (1)$$

$$Y \quad + I + G + (X - M) \qquad (2)$$

Substituting (2) into (1) and simplifying, we get a reduced-form expression for the equilibrium value of C:

$$C = \frac{a_0}{(1-a_1)} + \frac{a_1}{(1-a_1)}I + \frac{a_1}{(1-a_1)}G + \frac{a_1}{(1-a_1)}X - \frac{a_1}{(1-a_1)}M \qquad (3)$$

Substituting (1) into (2) and simplifying, we get a redu pression for the equilibrium value of Y:

$$Y = \frac{a_0}{(1-a_1)} + \frac{1}{(1-a_1)}I + \frac{1}{(1-a_1)}G + \frac{1}{(1-a_1)}X - \frac{a_0}{(1-a_1)}M \qquad (4)$$

The coefficients on each of the right-hand side variables are the respective multipliers for that type of spending.

Tax Analysis. Assume the only taxes (T) are lump-sum taxes on households. Then equation (1) is modified as $C = a_0 + a_1(Y - T)$, and the reduced form equations for C and Y will be:

$$C = \frac{a_0}{1-a_1} + \frac{a_1}{1-a_1}I + \frac{a_1}{1-a_1}G + \frac{a_1}{1-a_1}X - \frac{a_1}{1-a_1}M - \frac{a_1}{1-a_1}T$$

$$Y = \frac{a_0}{1-a_1} - \frac{a_1}{1-a_1}T + \frac{1}{1-a_1}I + \frac{1}{1-a_1}G + \frac{1}{1-a_1}X - \frac{1}{1-a_1}M$$

If household taxes are partially lump sum and partially proportional ($T = T_0 + t_1 Y$), then (1) is modified as $C = a_0 - a_1 T_0 + a_1(1 + t_1)Y$, and the reduced form equations for C and Y will be:

$$C = \frac{a_0}{1-a_1(1-t_1)} - \frac{a_1}{1-a_1(1-t_1)}T_0 + \frac{1}{1-a_1(1-t_1)}I + \frac{1}{1-a_1(1-t_1)}G + \frac{1}{1-a_1(1-t_1)}X - \frac{1}{1-a_1(1-t_1)}M$$

$$Y = \frac{a_0}{1-a_1(1-t)} + \frac{1}{1-a_1(1-t_1)}I + \frac{1}{1-a_1(1-t_1)}G + \frac{1}{1-a_1(1-t_1)}X - \frac{1}{1-a_1(1-t_1)}M - \frac{a_1}{1-a_1(1-t_1)}T_0$$

IS-LM Analysis

The IS-LM model is a two-market general equilibrium model of the economy.

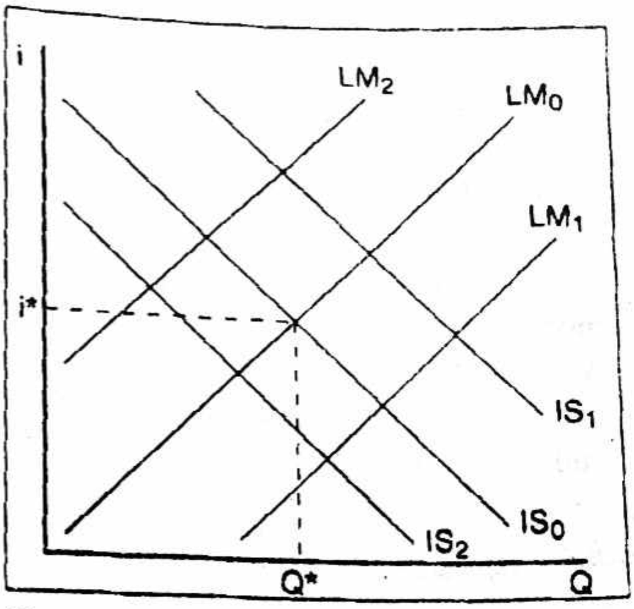


Figure 13-1 IS-LM Model

The IS Curve. The IS curve shows all combinations of the rate of interest (i) and real GNP (Q) at which the market for goods and services is in equilibrium. The IS curve has a negative slope. Intuitively, a higher rate of interest restricts interest-sensitive spending, causing the level of GNP to fall.

The IS curve shifts due to autonomous influences on the level of spending for goods and services. Examples of events that will shift the IS curve to the right include, but are not limited to: higher consumption resulting from an increase in current wealth or higher expected future income; an investment boom stimulated by a technological breakthrough, lower business taxes, or simply increased optimism about the future state of the economy; increased government spending; decreased taxes; and an increased foreign demand for our products. (Opposite changes shift IS to the left.)

The LM Curve. The LM curve shows all combinations of the real rate of interest and real GNP at which the money market is in equilibrium (demand for money = supply of money). The LM curve has a positive slope. Intuitively, excess demand for money caused by higher GNP can only be offset by a higher rate of interest.

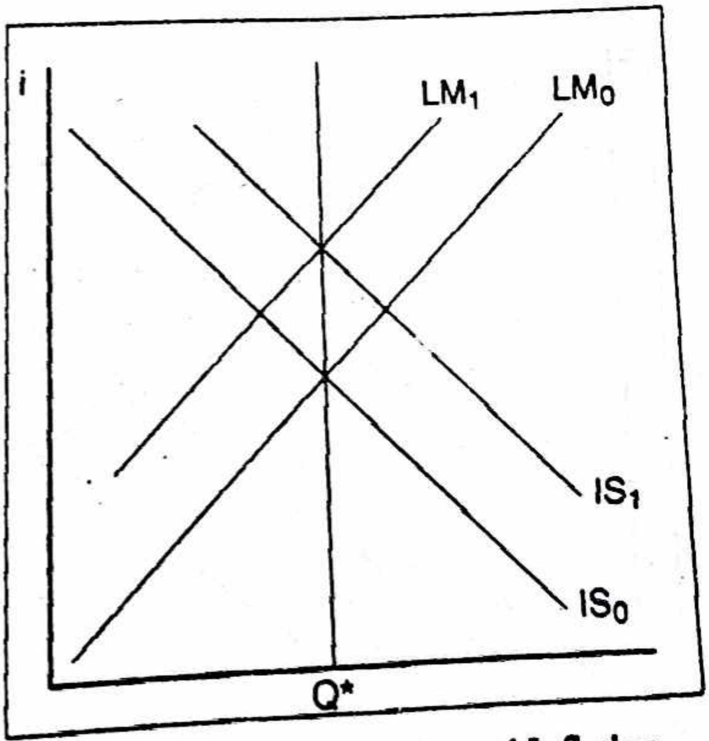


Figure 13-2 Full Employment and Inflation

LM shifts primarily due to changes in the real money supply. Increases in the nominal money supply or decreases in the price level shift the curve to the right. Opposite changes shift the curve to the left.

The intersection of an IS and LM curve (i.e., IS_0 and LM_0) determines the equilibrium rate of interest (i^*) and level of GNP (Q^*) in the economy.

Full Employment and Inflation. Refer to Figure 13-2. Assume IS_0 and LM_0 intersect at Q^*, the full employment level of GNP. The *IS* curve shifts to IS_1. Excess demand in the goods and services market puts upward pressure on the price level. Increases in the price level will reduce the real money supply, causing *LM* to shift from LM_0 to LM_1.

If the economy is at equilibrium with IS_1 and LM_1, an increase in the nominal money supply will initially shift the *LM* curve to LM_0. The higher money supply will push down the interest rate, thereby stimulating interest-sensitive spending and putting upward pressure on prices—which will offset the higher nominal money supply and shift *LM* back to LM_1.

Aggregate Demand and Aggregate Supply Analysis

The Aggregate Demand/Aggregate Supply model is useful in analyzing contemporary problems involving inflation and stagflation.

The Aggregate Demand Curve. The Aggregate Demand curve is a negatively sloped relationship between the aggregate price level (*P*) and the level of real GNP (see Figure 13-3). As *P* falls, the real value of consumer wealth increases and interest rates fall. Both act to increase spending and real GNP.

The curve shifts due to factors influencing autonomous spending levels or as the result of fiscal or monetary policy actions. Increases in autonomous spending or expansionary policy actions shift the curve rightward; decreases shift the curve leftward.

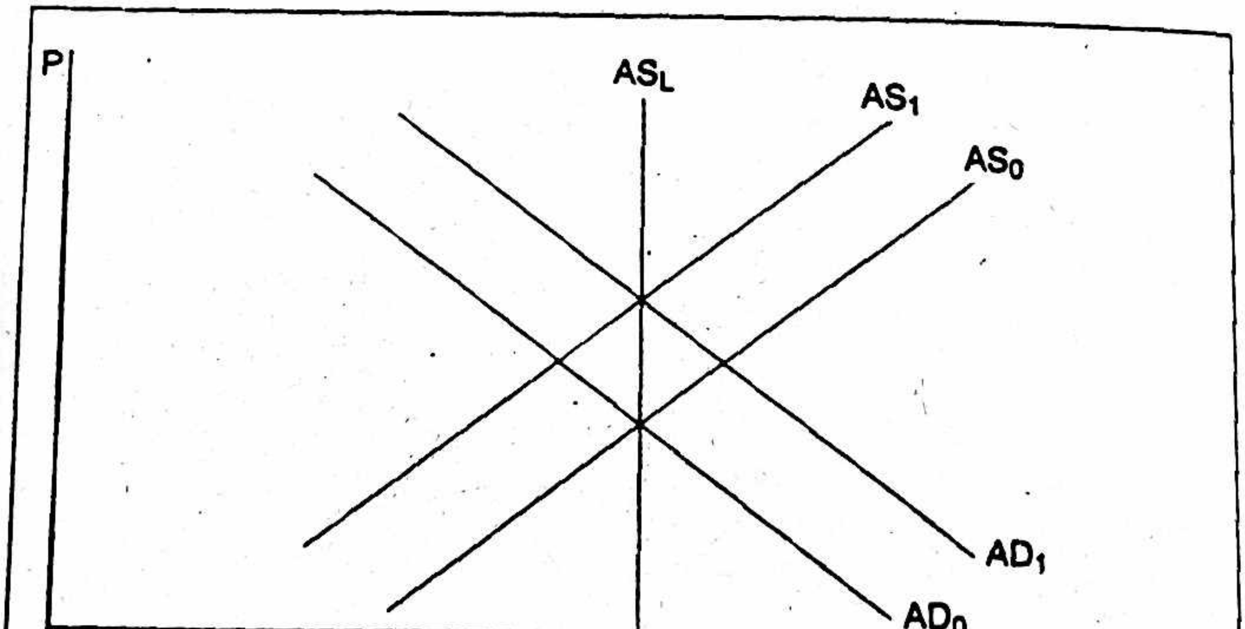


Figure 13-3 AD-AS Model

The Aggregate Supply Curve. The short-run aggregate supply curve (AS_0 or AS_1) shows a positive relationship between the aggregate price level and the level of real GNP. The curve shifts due to changes in costs of production. Higher costs shift the curve leftward; lower costs shift the curve rightward.

The long-run aggregate supply curve (AS_L) is a vertical line at the full employment level of GNP.

The economy is in short-run equilibrium where $AD = AS$. Assume the economy is in equilibrium at Q^* with AD_0 and AS_0. Expansionary policy actions shift AD to AD_1. The effect of higher demand will be to raise the price level, leading to higher costs of production for business. The later effect will work to shift AS to AS_1. In long-run equilibrium, AD and AS will intersect AS_L.

Inflation and Stagflation. Any attempt to drive GNP above Q^* will lead to inflation. If inflationary expectations are raised, a long period of high unemployment may be required to bring inflation down to an "acceptable" level. Supply shocks, such as interruptions of oil supplies, bad harvests, and the like can be represented by inward shifts of the short-run *AS* curve. An inward shift will both raise the price level and reduce GNP.

CHAPTER 14

MONEY AND BANKING

The Financial System

Financial Intermediaries. Financial intermediaries are organizations such as commercial banks, savings and loan institutions, credit unions, and insurance companies, which play an important role in facilitating the saving and investment process that helps the economy grow. Savers typically place their money where the combination of return, liquidity, and safety is best. Through the various types of deposits they offer, financial intermediaries compete for the saved funds. The money so obtained is used to finance borrowing. Through their ability to obtain large pools of money from many depositors, intermediaries are able to service the needs of large borrowers.

Balance Sheet of Typical Bank

Assets	Liabilities
Reserves	Demand Deposits
Loans	Savings Deposits
Securities	Time Deposits
Property	Other Deposits
Other Assets	Net Worth

"Fractional" Reserve Banking. All banks operate with reserve holdings equal to only a fraction of deposit liabilities. This is known as *fractional reserve banking.* If all depositors tried to withdraw their money simultaneously, banks would not be able to honor the demands. Fortunately, this is unlikely to happen; people like to hold deposits because they are safe and convenient. On a normal business day, some withdrawals are made, but these are counterbalanced by new deposits. Reserve holdings need be only a small fraction of deposits for prudent operation.

Money Classifications

M1. M1 consists of **currency, demand deposits, other checkable deposits,** and traveler's checks.

M2. This definition includes all of M1 along with **savings deposits, small denomination time deposits, money market mutual funds and deposit accounts, overnight RP's, and Eurodollars.**

The Money Creation Process

Assume M1 consists of currency and demand deposits only. The banking system consists of many small banks. The **required reserve ratio** is .20. In theory, all banks are "loaned up" (no bank holds excess reserves). The table follows the money creation process through the banking system after a $1,000 deposit in Bank A.

In this example, the initial deposit of $1,000 allowed the banking system to expand its demand deposit liabilities by $5,000. The formula to calculate this is $\Delta DD = 1/r^{*} \Delta R$, where r is the required reserve ratio and $(1/r)$ is known as the *deposit expansion multiplier.*

This multiple expansion of the money supply was a product of the actions of all the banks in the banking system. No single bank lent out more than its excess reserves.

Bank	New Deposits	New Required Reserves	New Excess Reserves	New Loans
A	$1,000.00	$ 200.00	$ 800.00	$ 800.00
B	800.00	160.00	640.00	640.00
C	640.00	128.00	512.00	512.00
D	512.00	102.40	409.60	409.60
E	409.60	81.92	327.68	327.68
F	327.68	65.54	262.14	262.14
G	262.14	52.43	209.71	209.71
H	◦	◦	◦	◦
I	◦	◦	◦	◦
◦	◦	◦	◦	◦
∞				
Total	$5,000.00	$1,000.00	$4,000.00	$4,000.00

Real World Complications. In the real world, the deposit expansion multiplier is unlikely to be as large as the value given by the formula. There are three reasons for this.

1. Every bank holds some excess reserves.
2. Some of the new money created leaks out into cash and is not redeposited in a bank.
3. Some bank customers seek deposits other than checking accounts.

The Federal Reserve System

FUNCTIONS. The major functions of the Federal Reserve System ("the Fed") are as follows:

1. **Bank Regulation.** The Fed is responsible for setting rules and regulations for banking operations, examining the financial condition of member banks, and approving mergers.
2. **Clearing Interbank Payments.** Banks receiving deposit checks drawn on other banks can present them to the Fed. The Fed will credit the receiving bank's reserve account, reduce the paying bank's reserve account, and send the check back to the paying bank.
3. **Lender of Last Resort.** By standing ready to loan reserves to banks experiencing difficulties, the Fed helps reduce the danger of panics.

MONETARY POLICY. There are three tools the Fed may use to influence interest rates, money supply, total spending, and the GNP.

1. **Open Market Operations.** Open market operations refers to the Fed's buying or selling of U.S. Government bonds in the open market. The purpose is to influence the amount of reserves in the banking system, and, consequently, the banking system's ability to extend credit and create money.
2. **Reserve Ratio.** The Fed can set the legal reserve ratio for both member and nonmember banks. The purpose is to influence the level of excess reserves in the banking system, and, consequently, the banking system's ability to extend credit and create money.
3. **Discount Rate.** Member banks needing reserves can borrow from the Fed. The interest rate the Fed charges on these loans is called the *discount rate*. By changing the discount rate, the Fed can influence the dollar amount member banks try to borrow, and, consequently, the banking system's ability to extend credit and create money.

Tool	Action	Effect on Interest Rates	Effect on Money Supply	Effect on Total Spending	Effect on GNP
Open Market Operations	buy	lower	raise	raise	raise
	sell	raise	lower	lower	lower
Reserve Ratio	raise	raise	lower	lower	lower
	lower	lower	raise	raise	raise
Discount Rate	raise	raise	lower	lower	lower
	lower	lower	raise	raise	raise

Monetary Policy Summary Table

The Demand for Money

The convenience of money creates a demand for it. This statement means that households will choose to hold a certain portion of their wealth in money form. The convenience of money is primarily in its liquidity. Money can be used to buy goods and services, acquire other assets, and provide a cushion against emergencies.

A household's demand for money is *positively related to its income* (households with higher incomes spend more money, and therefore need to hold more money to finance those transactions), and *negatively related to the interest rate* (higher interest rates—higher returns to assets other than money—increase the opportunity cost of holding wealth in money form because money typically pays no or very low interest).

See Figure 14-1, where the demand curve for money is represented by *D*1. At higher levels of income, the demand curve will shift out to *D*2. At lower levels of income, the demand curve will shift in to *D*3.

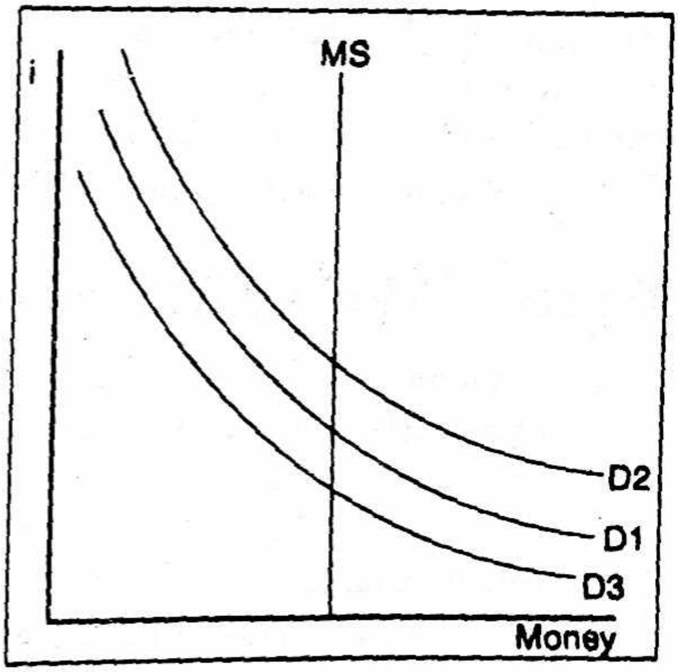


Figure 14-1 The Demand for Money Schedule

Monetary Policy

Federal Reserve System actions influence the economy primarily by influencing interest rates, credit availability, and the money supply, and consequently affects the interest-rate-sensitive portion of total spending (mainly, investment).

$$\uparrow MS \rightarrow \downarrow i \rightarrow \uparrow I \rightarrow \uparrow C + I + G + (X - M)$$

$$\downarrow MS \rightarrow \uparrow i \rightarrow \downarrow I \rightarrow \downarrow C + I + G + (X - M)$$

MS = Money Supply
i = interest rate
I = Investment (total)

C = Consumption
G = Gov't. expenditures
$(X-M)$ = eXports – iMports

Graphically, an increase in the money supply from MS to MS' will cause the equilibrium level of GNP to rise to GNP'. See Figure 14-2. A decrease in the money supply from MS to MS'' will cause the equilibrium level of GNP to fall to GNP''.

Monetarism

Equation of Exchange. The equation of exchange is written as $MV = PQ$, where M = money supply, V = **velocity of money**, P = the average price level, and Q = the quantity of goods and services.

Quantity Theory of Money. The quantity theory of money is used by classical economists to explain the rate of inflation. From the equation of exchange, assume that V is constant due to institutional reasons, and Q is constant because the economy's equilibrium is at full employment. If M doubles, P must also double. Therefore, the price level is determined by the quantity of money.

Tenets of Modern Monetarism

1. While not a constant, V is "relatively stable," meaning it does not change dramatically from year to year, and can be predicted with a relatively small margin of error.
2. Even though Q may not be at the full employment level for extended periods of time, the money supply can be used to predict nominal GNP (PQ) with a high degree of accuracy.
3. Changes in the money supply are the most important—*although not only*—factor affecting the economy.
4. The Fed should *not* use discretionary monetary policy in an attempt to stabilize the economy. Long lags in effect of policy on the economy puts

a premium on the Fed's ability to forecast the future, and because in the long run, changes in the money supply affect only nominal prices and GNP; monetary policy has no *real* effect. Since forecasting is not a precise science, the Fed is as likely to follow inappropriate as appropriate policy. *Monetarists prefer that the Fed let the money supply grow at a constant rate.* Since changes in the money supply are the main cause of fluctuations in the economy, a smooth rate of growth for money should help smooth the growth of the economy. A constant rate of growth for the money supply is superior to any alternative.

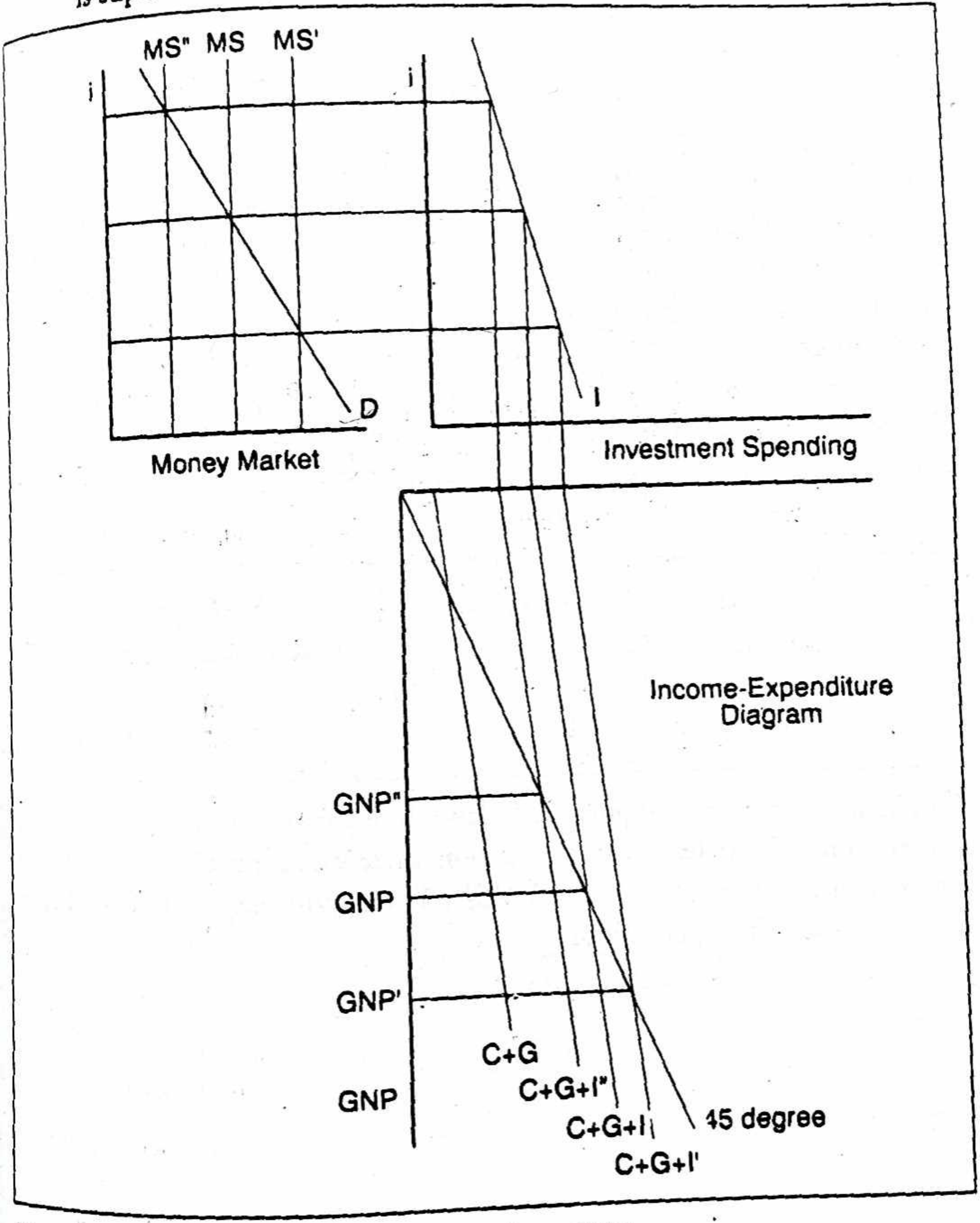

MS"
MS
MS'
i
D
Money Market
i
I
Investment Spending
Income-Expenditure Diagram
GNP"
GNP
GNP'
GNP
C+G
C+G+I"
C+G+I
C+G+I'
45 degree

Figure 14-2 Effect of Changes in Money Supply on GNP

CHAPTER 15

INTERNATIONAL ECONOMICS

Gains from Trade

The law of *comparative advantage* explains why trade is beneficial between two nations, even if one of the nations holds an **absolute advantage** in the production of all goods and services.

Consider a world of two nations of about equal size, called Japan and the United States. Each is capable of producing only two goods, telephones and VCRs. Resources are fully employed in both nations. Note that Japan has an absolute advantage in the production of both goods. Note also the opportunity costs of production in both countries.

	Telephones per unit of resources	VCRs per unit of resources
Japan	1	3
U.S.	1	1

Opportunity costs are computed as follows: In Japan, if one unit of resources is shifted from VCR to telephone production, three VCRs must be given up to get one telephone. Therefore, $1\ T = 3\ VCR$. The opportunity cost of good X in terms of good Y is $\dfrac{Y \text{ per unit of resources}}{X \text{ per unit of resources}}$.

	Cost of One Telephone	Cost of One VCR
Japan	3 VCRs	⅓ telephone
U.S.	1 VCR	1 telephone

A country has a comparative advantage in the production of a good if it has the lowest opportunity cost. Here Japan has the comparative advantage in VCRs; they cost one-third telephone in Japan as compared to one telephone in the United States. The U.S., despite being less efficient than Japan in telephone production, has a comparative advantage because telephones cost only one VCR as opposed to three in Japan. As a general rule, regardless of how inefficient a producer a country is, it is bound to have a comparative advantage in something.

Why (and what) will the Japanese trade with the United States? If the Japanese try to produce telephones, it will cost them three VCRs for every unit of resources shifted to telephone production. It may be cheaper to buy phones in the U.S., where they cost only one VCR. Similarly, domestically produced VCRs cost one telephone in the U.S., but the U.S. may be able to buy them cheaper in Japan, where they cost only one-third VCR. Even though Japan has an absolute advantage in the production of telephones, it makes sense for it to buy from the United States. While the U.S. lacks an absolute advantage in telephone production, it can still be a successful competitor in the world market.

The magnitude of the gains from trade will depend on the world prices that arise for VCRs and telephones. The U.S. may charge Japan more than one VCR per phone. As long as the price is less than three VCRs, the Japanese are better off trading for phones than producing them themselves. Likewise with the U.S. and VCRs.

The price of phones and VCRs in the world market (the exchange ratio between phones and VCRs) cannot be determined precisely. We know it must be between $1P = 1\,VCR$ and $1P = 3\,VCR$ for both countries to be able to benefit from trade.

Restrictions on Trade

Figure 15-1 shows the market for a tradable good in countries *A* and *B*. If there is no trade between the countries, the good would sell for P_1 in *A* and P_2 in *B*. If free trade is encouraged, country *B* producers would export to country A to take advantage of the higher price. The increased supply in country *A* would reduce the product's price there, and the decreased supply in country *B* would raise the price there. In equilibrium the price of the product would be equal in both countries (P_0) and the excess supply in *B* at price P_0 ($Q_6 - Q_5$) will be exported to *A* to satisfy *A*'s excess demand ($Q_4 - Q_1$).

That this is a more efficient outcome is easily shown. Recall that the industry supply curve measures marginal cost of production. Prior to free trade, marginal cost is higher in *A* than *B*. Free trade causes *A*'s higher cost domestic producers to reduce production while *B*'s lower cost producers expand. Consequently, total costs of production will be lower.

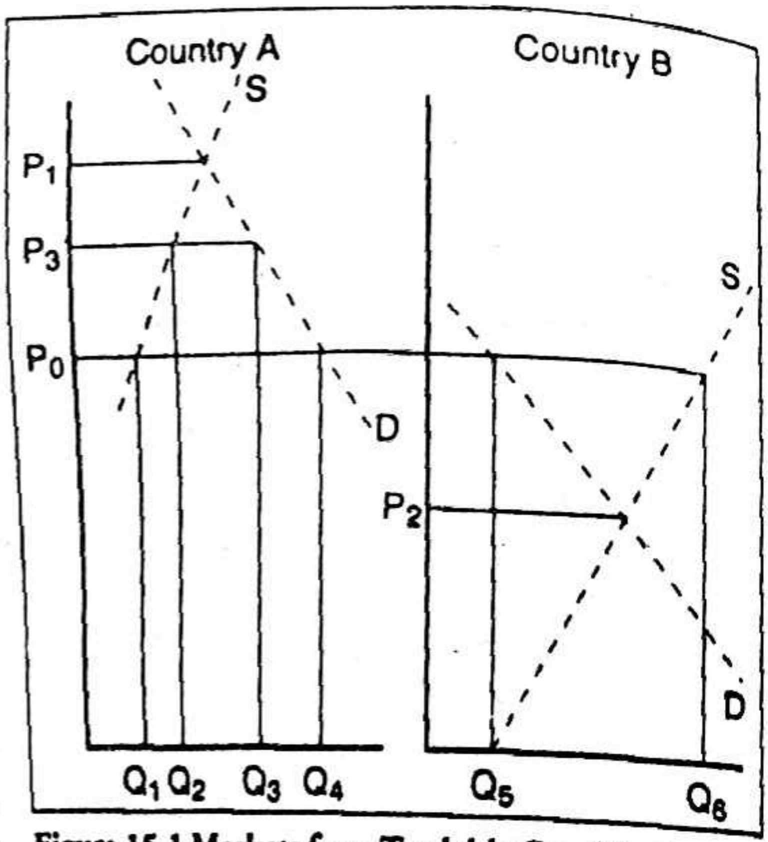


Figure 15-1 Markets for a Tradable Good in Country A and B

Now assume *A* imposes a tariff on the product that raises its price in *A* to P_3. There are benefits and costs of this policy to the various parties. In *A* domestic producers benefit because they can sell more (Q_2) at a higher price. Domestic consumers lose for that reason. Also, the government of *A* receives revenue from the tariff. Country *B* producers will lose because they can no longer sell as much in *A* ($Q_3 - Q_2$ instead of $Q_4 - Q_1$) and must sell at a lower price in *B*. Country *B*'s consumers will gain from lower domestic prices.

The effects of a quota imposed by country *A* on imports from *B* are similar to those of a tariff. If *A* can only import $Q_3 - Q_2$ instead of $Q_4 - Q_1$, the price would rise to P_3, helping domestic producers (who could now sell Q_2 units at P_3 instead of Q_1 at P_0) while hurting domestic consumers. The import restriction would hurt some of *B*'s domestic producers (those who cannot get import licenses) and help domestic consumers. The difference from the tariff case is that country *B* producers who can obtain import licenses into *A* will reap windfall profits, and country *A*'s government will not be receiving tariff revenue. In a sense, compared to tariffs, quotas hurt the imposing country's government and help the other country's producers.

Exchange Rates

Exchange rates are set in the foreign exchange market by the forces of demand and supply. For example, if the Dutch want to acquire our goods, services, and assets, they must acquire dollars. This is the basis of the demand curve for dollars. The more valuable the guilder, the greater the quantity demanded of dollars because a valuable guilder makes American goods, services, and assets a better buy to the Dutch. If Americans want to acquire Dutch goods, services, and assets, they must acquire guilders. To do so, they must supply dollars. Here, the more valuable the dollar, the greater the quantity supplied. (More advanced treatments allow the supply curve to have a negative slope in some cases.)

Other factors influencing the demand and supply of dollars include relative national income, relative national price levels, and relative interest rates. Any factor making American goods, services, and assets more attractive—e.g., a rise in foreign income, a rise in foreign price levels, or a fall in foreign interest rates relative to American interest rates—will increase the demand for dollars. Any factor making foreign goods, services, and assets more attractive—a rise in American income or price levels or a fall in interest rates relative to foreign rates—will increase the supply of dollars (see Figure 15-2).

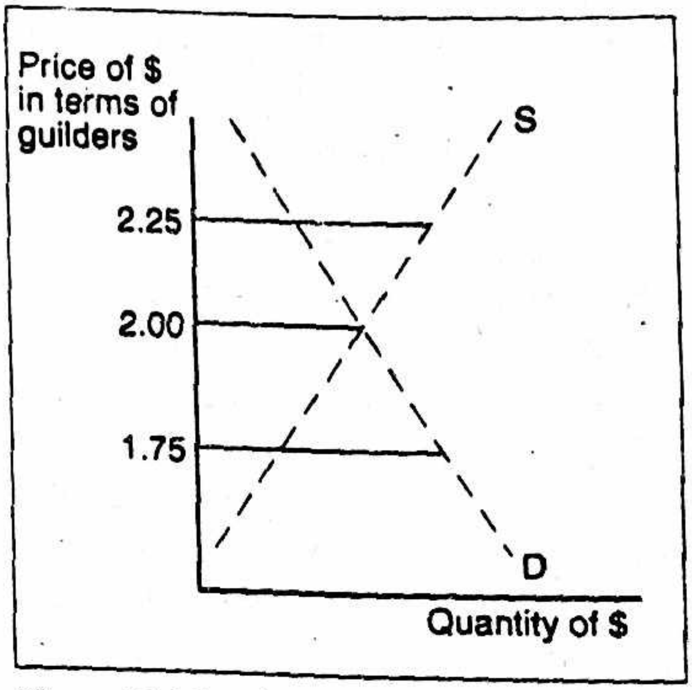


Figure 15-2 Equilibrium in the Market for Dollars

Purchasing Power Parity

The purchasing power parity (PPP) doctrine says exchange rates will adjust to equalize the purchasing power of a unit of currency in all countries. For example, assume perfume sells for $20 a bottle in the United States and fifty guilders (F 50) a bottle in Holland. According to PPP, the exchange rate will adjust to $1 = F 2.5, so that both Americans and the Dutch are indifferent about whether to buy the perfume in America or Holland. If the exchange rate was $1 = F 3, perfume in Holland would cost Americans $16.67 and perfume in America would cost the Dutch F 60. This would lead both countries to buy perfume in Holland, and the guilder would appreciate in value. If the exchange rate was \$1 = F 2, perfume would be cheaper in America (can you calculate the price in guilders?). The demand for dollars would cause the dollar to appreciate. The only equilibrium is at PPP.

Balance of Payments

The **balance of payments** uses a double-entry system of bookkeeping. Transactions are recorded as debits and credits. From the standpoint of the United States, a debit transaction is one that requires us to demand foreign currency. Examples of debit transactions are: imports of goods and services; gifts made to foreigners (also known as remittances); acquisition of a foreign long-term asset or reduction of a foreign long-term liability (i.e., stocks, bonds, real capital); and acquisition of a foreign short-term asset or reduction of a foreign short-term liability (i.e., checking-account balances or short-term bonds).

From the standpoint of the United States, a credit transaction is one that causes foreigners to demand dollars. Examples of credit transactions are: exports of goods and services; gifts received from foreigners; sale of an American long-term asset or an increase of an American long-term liability; and sale of an American short-term asset or an increase of an American short-term liability.

All transactions are placed into specific categories. The simplest breakdown is between the current account and the capital account. The current account records all transactions involving goods and services. The capital account records all transactions involving short- and long-term assets. A blank balance of payments ledger might appear as in the table.

	Debit	Credit
Current Account		
Capital Account		

Schematic of the Balance of Payments Account

Every international transaction gives rise to both debit and credit entries. For example, a purchase of foreign-produced goods with American dollars will result in a debit in the current account for the goods and a credit in the capital account for the money (short-term liabilities to foreigners have increased). If foreigners buy American long-term assets with foreign money, there will be a credit in the capital account for the assets and a debit in the capital account for the money (short-term assets). Consequently, the balance of payments must always balance in an accounting sense. Note the following table.

	Debit	Credit
Current Account	\$ 800,000 \$ 5,000	
Capital Account	\$2,000,000	\$ 800,000 \$2,000,000 \$ 5,000
Total	\$2,805,000	\$2,805,000

Balance of Payments Example

Balance of payments "imbalances" result from looking at just a portion of the ledger. Some important balances are:

1. **Balance of Trade.** The net balance of debits and credits for goods (not shown in table above).
2. **Balance on Current Account.** The net balance of debits and credits for goods and services (an \$805,000 debit balance in table above).
3. **Balance on Capital Account.** The net balance of debits and credits for short- and long-term assets (an \$805,000 credit balance in table above).

CHAPTER 16

INFLATION AND GROWTH

Inflation

Phillips Curve. The Phillips Curve shows the trade-off between inflation and unemployment (see Figure 16-1). Policies that reduce unemployment have a cost in terms of higher inflation. Policies that fight inflation have a cost in terms of higher unemployment. The curve also indicates that inflationary problems can begin before an economy reaches full employment.

The Phillips Curve appeared to be a good description of the economy's behavior in the 1950s and 1960s. To many economists, it was discredited by "stagflation" of the late 1970s and early 1980s. Economists have speculated that the Phillips Curve is capable of shifting in or out and it shifted out during the last two decades, giving us a worsened trade-off (Figure 16-2).

Inflationary Expectations. The term inflationary expectations refers to society's beliefs about what is going to happen to the rate of

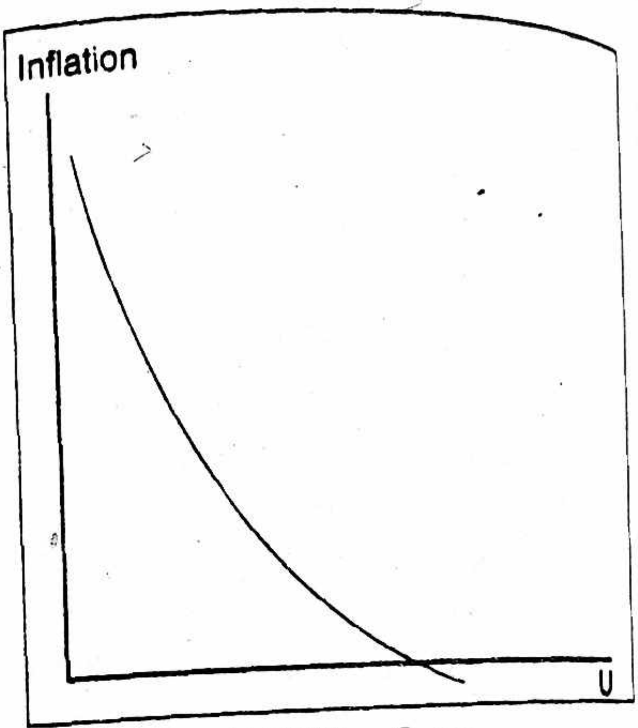


Figure 16-1 The Phillips Curve

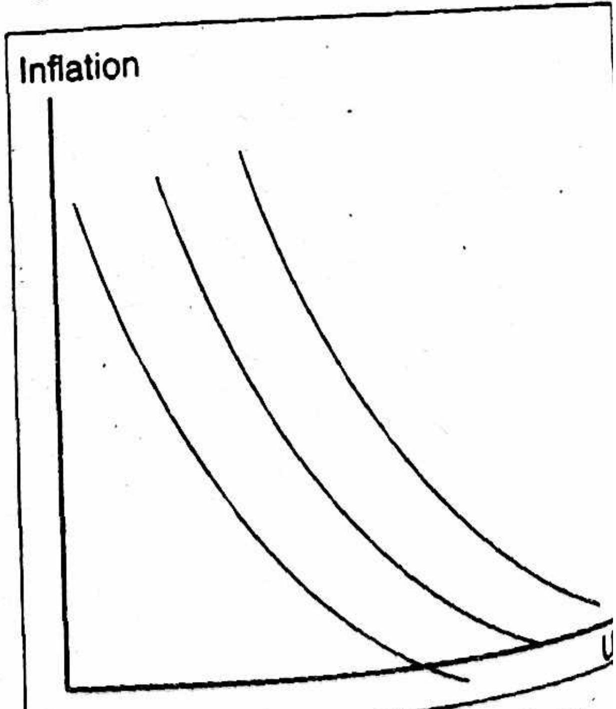


Figure 16-2 The Shifting Phillips Curve

inflation. Since inflationary expectations tend to be self-fulfilling, this is an important concept. If consumers believe inflation will increase in the future, they are apt to buy more and save less now, contributing to excess demand. If workers believe that inflation is going to increase in the future, they tend to demand automatic wage increases to maintain their real earnings and have cost-of-living protection built into labor contracts. Both actions will raise future costs and make inflation more likely. Higher inflationary expectations shift the Phillips Curve outward. Lower expectations shift the curve inward. One important goal of economic policy is influencing people's expectations.

Accelerationist Hypothesis. Much of the economics profession today believes the long-run Phillips Curve is a vertical line at the natural rate of unemployment. This implies there is no permanent trade-off between inflation and unemployment, and that full employment can be achieved and held at any level of inflation, provided people come to expect that rate and adjust accordingly. See Figure 16-3.

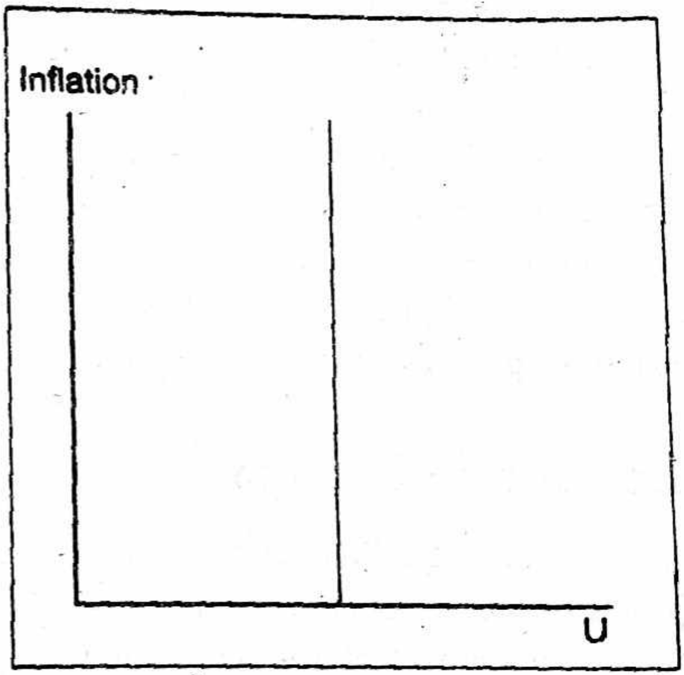


Figure 16-3 The Long-Run Phillips Curve

Attempts to hold unemployment below the natural rate will lead to accelerating inflation, because policies that reduce unemployment (i.e., policies that increase aggregate expenditure) will raise prices and wages and throw markets out of equilibrium. As firms recognize their wage costs have risen, they will be forced to raise prices further. As workers realize the purchasing power of their higher wages has been reduced by higher prices, they will demand still greater wage increases. Inflationary expectations will take hold, and wages and prices push each other higher and higher. Only high unemployment for an extended period of time is capable of bringing the inflation rate back to an acceptable level.

Cost-Push and Supply-Shock Inflation. Cost-push and supply-shock inflation refer to similar situations, when factors on the supply side of the economy push up costs of production and force firms to raise prices. Labor unions are frequently accused by critics of creating cost-push inflation. According to this charge, irresponsible unions demand and win "excessive" wage increases, which force firms to raise prices. Of course, the price increases become the rationale for a new round of wage increases leading to a *wage-price spiral*. A variation on the story sees the initial push coming from firms that raise prices to increase their profit. These prices are costs to other firms and they also stimulate labor to demand higher wages, and the spiral continues. Supply-shock inflation is of more recent vintage. It occurs when a vital resource becomes scarce, causing its price to rise and raising costs of production for firms, setting off an upward spiral. An example of supply-shock inflation is oil shortages. Both cost-push and supply-shock inflation can be represented graphically by an outward shift of the Phillips Curve. Both create dilemmas for anti-inflation policy because upward movements in costs will also force firms to lay off workers. Thus, the economy faces stagflation. If the authorities raise demand to put people back to work, the inflation problem worsens. If the authorities reduce demand to fight inflation, the unemployment problem gets worse.

Rational Expectations. Rational expectations models assume that people form inflationary expectations quickly in a rational manner, using all the information available. The theory's significance is its prediction that inflation is capable of being beaten quickly with limited cost. This will happen if the government has credibility with the public. Thus, if the government proclaims an anti-inflation policy, the public believes it and immediately adjusts its inflationary expectations to an environment of no inflation. Under these circumstances inflation will fall almost instantaneously and there need be no extended period of high unemployment.

Economic Growth

Productivity. Productivity is a measure of how much output workers produce for each hour of work. Letting Q stand for output and L for labor input, the productivity of labor can be expressed as Q/L, and the relationship with Q is given by $Q = (Q/L) * L$.

Productivity and Living Standards. The key to improving a nation's living standard is to increase productivity. If workers can produce more per hour, then more product is available to be consumed and workers can work fewer hours—or some combination of the two.

Increasing Productivity. There are two main ways to raise productivity: Work harder, or work smarter. Working harder means expending more human physical effort during each hour of work (raising L). It seems unlikely that much of our economy's increase in productivity over time is a result of people actually working harder. Working smarter refers to a number of factors, including using more and better capital equipment, better education, more finely developed job skills, and better health. These factors all allow a worker to produce more in an hour of work (raising *Q/L*). Presumably most of our nation's economic growth over time has resulted from these factors.

Supply-Side Economics

Supply-side economics is an approach to economics that places great emphasis on the effect of government policies on our willingness to work and ability to produce. In a sense, all economists are "supply-siders" because economic analysis has always stressed the influence of incentives in altering both consumption and production behavior, but when speaking about the United States, supply-side economics usually refers to the policy views of a group of economists and politicians who actively promote the use of tax cuts and deregulation above all else as a method of restoring rapid growth. Recently, they believed that marginal tax rates were so high as to dramatically reduce the rewards of working, saving, and investing, and therefore hampered economic growth. Likewise, excessive government regulation of business was alleged to be stifling productive activity. These views were very prominent during the administration of President Ronald Reagan.

Laffer Curve. The Laffer Curve (Figure 16-4) shows the relationship between the marginal tax rate and the government's tax revenue.

At a zero percent tax rate, the government obviously will not take in any revenue. At a 100 percent rate, the government likewise will not take in revenue because, since there is no reward for working, no one will work and earn income. Since the government does tax and take in some revenue, the curve must have a positively sloped segment, but it also must curve back at some tax rate to reach the point of zero revenue and 100 percent tax rate.

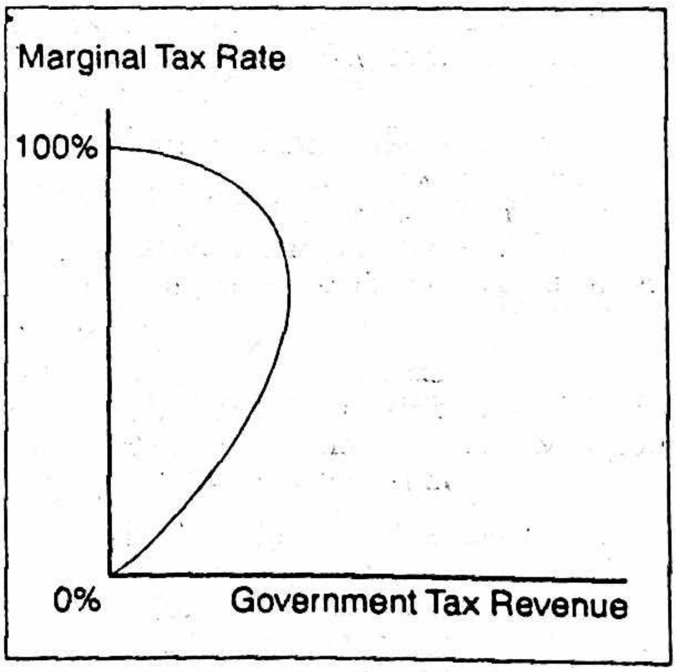


Figure 16-4 The Laffer Curve

CHAPTER 17

STATISTICS AND ECONOMETRICS

Populations and Samples

Population. A population refers to all possible values that a *random variable* can take on.

Sample. A sample refers to a subset of values from a population.

In quantitative analysis the researcher is typically restricted to a sample of data, and must use that information to make inferences about the underlying population that the sample was derived from.

Descriptive Statistics

(A) Measures of Central Tendency

Measures of central tendency are used to describe the general magnitude of a variable. Assume variable x takes on n values (some values can be repeated) in a sample.

(1) Mean (μ= population mean; $\bar{x}$ = sample mean):

$$\mu = \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}.$$

(2) Median: The median is the value of x that divides the group in half when the group has been arrayed from smallest to largest. Half the values in the group are less than the median; half the values are greater.

(3) Mode: The mode is the value of x that occurs most frequently.

(B) **Measures of Dispersion**

Measures of dispersion indicate how "spread out" data is.

(1) Standard Deviation

(a) Population (σ):

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)}{n}}.$$

(b) Sample (s):

$$s = \sqrt{\frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)}{n-1}}.$$

(2) Variance

(a) Population (σ^2):

$$\sigma^2 = \frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)}{n}.$$

(b) Sample (s^2):

$$s^2 = \frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)}{n-1}.$$

(3) Range: The range is the difference between the highest and lowest value in the data.

Frequency Distributions

A frequency distribution is a table, graph, or equation showing how often a variable takes on a particular value in a population or sample. Two commonly used distributions are normal distribution and t-distribution.

Normal distribution can be represented by the bell-shaped curve shown in Figure 17-1. The curve is symmetric and centered on the mean value of the variable. The distribution can be fully described by its mean and standard

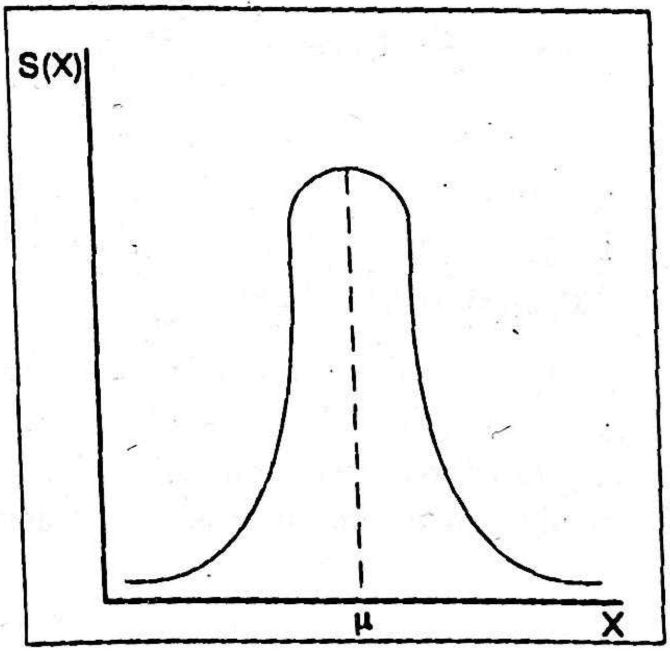


Figure 17-1 The Normal Distribution

deviation. All normal distributions share an important property. Approximately sixty-eight percent of the area under the curve lies within one standard deviation on either side of the mean; approximately ninety-five percent of the area lies within two standard deviations; approximately ninety-nine percent of the area lies within three standard deviations.

The exact shape of any normal distribution depends on the mean and standard deviation of the variable, as well as the units in which the variable is measured. Fortunately, every normal distribution can be transformed into the standard normal distribution. This simply requires computation of the Z variable, which is given by the expression $Z = \frac{x - \bar{x}}{\sigma}$. The standard normal distribution has the same properties as the distribution in Figure 17-1. (Tables can be found in any statistics or econometrics textbook that allow the area under the curve between any two points to be calculated.)

Assume a series of large samples are drawn from a normally distributed population. Statistical theory tells us three things: the sample means are normally distributed; the mean of all the sample means is equal to the population mean; and the standard deviation of the sample means ($\sigma_{\bar{x}}$) is given by $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$. Inferences about the population mean can be drawn using the standard normal distribution.

When the true value of the population standard deviation is unknown (the usual situation), the t-distribution can be used. The t-distribution looks very similar to the normal distribution. It is represented by a symmetric, bell-shaped curve centered on the mean of the population. The formula for the t-variable is $t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$. Tables for computing areas under the t-distribution are widely available.

Hypothesis Testing

In classical hypothesis testing, the process begins by establishing two hypotheses, the null (H_0) and the alternative (H_A or H_1). The hypotheses are structured so as to be mutually exclusive and exhaustive. The three common cases, where *a* stands for some value, are:

Case I	Case II	Case III
$H_0: \sigma = a$ $H_1: \sigma \neq a$	$H_0: \sigma \geq a$ $H_1: \sigma < a$	$H_0: \sigma \leq a$ $H_1: \sigma > a$

A rule of thumb is that in Cases II and III, H_1 is the hypothesis you believe is correct. In Case I, H_0 is likely to be the hypothesis believed correct.

Regression

(A) **Simple Regression.** Assume economic theory suggests that variable Y is determined by variable X. In general functional notation, $Y = f(X)$. A linear regression equation can be written as follows: $Y = a_0 + a_1X + \varepsilon$, where a_0 is the intercept, a_1 is the slope, and ε is known as the stochastic error term; ε is a random variable.

(B) **Ordinary Least Squares Estimation.** The most common statistical method used to estimate regression curves. $\hat{a}_0$ and $\hat{a}_1$ are known as the ordinary least squares estimates and have the favorable statistical properties of unbiasedness, efficiency, and consistency. Numerical values for a_0 and a_1 can be obtained from the following equations:

$$\hat{a}_1 = \frac{\sum\left(X_t - \bar{X}\right)\left(Y_t - \bar{Y}\right)}{\sum\left(X_t - \bar{X}\right)^2} \tag{1}$$

$$\hat{a}_0 = \bar{Y} - \hat{a}_1\bar{X}. \tag{2}$$

The following assumptions about the error term are necessary to the ordinary least square estimates:

1. $E(\varepsilon_t) = \mu_\varepsilon$, the expected value of the error term is zero;
2. $E = \left(\varepsilon_t - \mu_\varepsilon\right)^2 = E\left(\varepsilon^2{}_t\right) = \sigma_\varepsilon^2$, the variance of the error term is constant for all observations (homoscedasticity);
3. $E[(\varepsilon_t - \mu_\varepsilon)\ (\varepsilon_s - \mu_\varepsilon)] = cov(\varepsilon_t, \varepsilon_s) = 0$, for all $s \neq t$, the error term is not autocorrelated;
4. $E(\varepsilon_t, X_t) = cov(\varepsilon_t, X_t) = 0$, the error term is not correlated with independent variable.

Unbiasedness occurs when the expected value of the estimates equals the true value of the parameter: $E(\hat{a}_n) = a_n$. Efficiency occurs when the variance of the estimates around their true value is smaller for ordinary least squares than any other technique. Consistency occurs when the sample size approaches infinity and the variance of the parameter estimates gets smaller and smaller.

In multiple regression, the value of the dependent variable is assumed to depend on two or more independent variables plus a stochastic error term, as suggested by the following equation:

$$Y = a_0 + a_1X_1 + a_2X_2 + \ldots + a_nX_n + \varepsilon.$$

If the same assumptions hold regarding the error term, ordinary least squares estimates of the parameters (equations not shown) have the same properties as those listed above.

Regression equations are commonly used by economists for hypothesis testing and forecasting. Hypothesis testing typically involves evaluating theoretically expected relationships between variables by observing and testing the statistical significance of estimated values for particular parameters.

Forecasting involves solving the regression equation for future values of the dependent variable.

GLOSSARY

Absolute Advantage - A country possesses an absolute advantage in the production of a good or service if it is the most efficient producer of the item compared to other countries.

Absolute Poverty Standard - Measures poverty by comparing people's incomes to what is considered an "acceptable" standard of living.

Accounting Profit - A firm earns an accounting profit when its revenues exceed its explicit costs.

Adverse Selection - This concept posits that sometimes the most likely buyer or seller of a particular good or service is so atypical that a market is unlikely to arise. For example, if unhealthy individuals are more likely to buy health insurance, private companies providing this service may have a hard time surviving.

Arc Elasticity - Measures the responsiveness of a variable to a change in a causal factor. Arc elasticity is defined for discrete changes in the causal factor.

Arrow's Impossibility Theorem - No collective decision-making rule can guarantee results that are not unfair or paradoxical.

Autonomous Spending - Spending that is not influenced by the level of income.

Average Propensity to Consume (APC) - The proportion of income consumed. APC = C/Y.

Average Propensity to Save (APS) - The proportion of income saved. APS = S/Y.

Balance of Payments - A summary statement of the transactions that take place between a country and the rest of the world during a given period of time.

Budget Constraint - Shows all the combinations of two goods or services that can be purchased given the consumer's income and the prices of the products.

Capital Consumption Allowances - In the GNP accounts, this category measures the value of capital depreciation in the economy.

Cartel - A group of once-competing firms who agree to cooperate with each other and act like a monopoly.

Coase Theorem - The Coase theorem holds that if bargaining costs are minimal, bargaining between private individuals may eliminate the effects of externalities.

Cobb-Douglas Production Function - The Cobb-Douglas production function has the following form: $Q = b_0 K^{b_1} L^{b_2}$, where K is capital, L is labor, and b_0, b_1, and b_2 are parameters.

Collective Bargaining - When representatives of labor and management negotiate over terms and conditions of employment.

Collusion - When firms cooperate with each other to try to extract monopoly profits from the public. Collusion can be explicit or tacit, formal or informal.

Compensation of Employees - In the GNP accounts, this category includes all wages, salaries, and supplements. Supplements are aspects of employee compensation that do not show up in the paycheck, such as employer contributions to social security.

Complement Goods - Goods that can be used with each other. Good B is a complement of good A if the utility of A is enhanced when it is used with good B.

Constant Elasticity of Substitution Production Function - The CES production function has the following form: $Q = b_0\left[b_1 K^r + \left(1 - b_1\right)L^r\right]^{\frac{1}{r}}$, where r is a parameter.

Constant Returns to Scale - Occur when all inputs are increased a certain proportion and output increases by the same proportion.

Corporate Profits - In the GNP accounts, this category measures the difference between sales revenues and costs for all corporations.

Cross-elasticity of Demand ($E_{A,B}$) - $E_{A,B}$ is a measure of the responsiveness of the quantity demanded of good *A* to a change in the price of good *B*.

$$E_{A,B} = \frac{\%\Delta \text{quantity demanded of good } A}{\%\Delta \text{price of good } B}.$$

Currency - Coins and paper money.

Cyclical Unemployment - Occurs when workers lose their jobs due to a downturn in the business cycle.

Decile - A one-tenth part of the whole.

Decreasing Returns to Scale - Occur when all inputs are increased a certain proportion and output increases by a lesser proportion.

Demand Deposits - Checking accounts held in commercial banks. Funds can be transferred from person to person by means of a check. Demand deposits are considered money because checks are generally acceptable.

Derived Demand - The demand for any factor of production is considered a derived demand. Unlike goods and services that are a direct source of utility to consumers, the value of factors derives from their role in the production of goods and services. It is the demand for goods and services that creates a demand for factors, which would not be demanded otherwise.

Diminishing Returns - see Law of Diminishing Returns.

Discouraged Workers - Discouraged workers are people who are without a job and want a job, but have looked unsuccessfully for such a long time that they have, in effect, "given up" the search. Officially, they are counted as "not in the labor force" because they are not actively seeking work.

Disposable Income - Measures income households have free to spend.

Economic Incidence (of a Tax) - Refers to how a tax affects the purchasing power of groups throughout society.

Economic Profit - A firm earns an economic profit when its profit exceeds what it could earn in its next best alternative.

Employment - A person has employment when he or she has a paying job. In the United States, only one hour of paid work a week is sufficient to be considered employed.

Employment Rate - The employment rate (ER) is the number of employed people as a percentage of the population (Pop). ER = E/Pop.

Endogenous Variable - A variable whose value is determined by the system of equations under consideration.

Eurodollars - Bank accounts denominated in dollars in foreign banks.

Excess Burden - The loss of economic efficiency engendered by taxes.

Excess Capacity Theorem - Long-run equilibrium in monopolistic competition occurs at an average cost of production higher than minimum. There is excess capacity because if fewer firms produced larger amounts of output, average costs of output could be reduced. There is controversy about whether excess capacity represents inefficiency or simply the cost of desirable product differentiation.

Excess Reserves - The difference between the amount of reserves a bank holds and what it is required to hold.

Explicit Costs - Costs that entail an actual outlay of money.

Externalities - Any effect of an economic transaction, not captured in the market price, on a person who is neither the buyer nor seller.

First-degree Price Discrimination - Occurs when each unit of a product is sold for the highest price it will fetch.

Fixed Costs - Costs that do not vary with the level of output (such as depreciation and certain contractual commitments).

Frictional Unemployment - Temporary unemployment caused by dynamic changes in the economy. It comprises workers who have quit, been fired or laid off, or are new entrants to the labor force. They likely will find a new job in a short period of time.

Full Employment - The level at which there is little or no involuntary unemployment. At full employment, the number of vacant jobs equals the number of unemployed workers; they simply have not located the jobs or lack the required skills. Most economists believe full employment is obtained when the unemployment rate is in the 4.0 to 5.5 percent range. Full employment is not a situation where the employment rate is 100 percent, or the unemployment rate is zero percent.

Giffen Good - A good for which the quantity demanded increases when its price rises. These are very rare.

Government Spending on Goods and Services - In the GNP accounts, this category includes all government (federal, state, and local) purchases of goods and services, but does not include transfer payments.

Gross Private Domestic Investment - In the GNP accounts, this category includes private business spending for new capital equipment, changes in business inventories, and household purchases of new homes.

Implicit Costs - The opportunity costs of production, those sacrifices a firm must make that do not entail actual outlays of money.

Income Effect - Measures the effect on the quantity demanded of good X resulting from a change in consumer income while holding the relative price of good X constant.

Income-elasticity of Demand - A measure of the responsiveness of the quantity demanded of a good to a change in income (E_y).

$$E_y = \frac{\%\Delta \textit{quantity demanded}}{\%\Delta \textit{income}}$$

Increasing Returns to Scale - Occur when all inputs are increased a certain proportion and output increases by a greater proportion.

Indifference Curve - Shows all combinations of two goods that provide the same level of utility to the consumer.

Indirect Business Taxes - In the GNP accounts, this category measures taxes, paid by businesses, that are not levied on sales or income. Examples are property taxes and license fees.

Inferior Good - A good for which demand decreases as consumer income rises

Inflation - A sustained, substantial increase in the average level of prices.

Isocost Line - Shows all combinations of two inputs that require the same total expenditure.

Isoquant - Shows all combinations of two inputs that can be used to produce a given level of output.

Interest - In the GNP accounts, this category measures the income earned from lending money. In general terms, it is the return paid to lenders by borrowers of money.

Labor Force - Consists of all people who have a job or would like a job and are actively seeking one. In short, the labor force consists of all employed and unemployed people.

Labor Force Participation Rate (LFPR) - The percentage of the population (Pop) in the labor force. LFPR = LF/Pop.

Law of Diminishing Returns - As equal amounts of a variable input are added to the fixed input, the additions to total output eventually begin to diminish.

Loanable Funds - Money available for lending and borrowing.

Logrolling - The trading of votes among politicians. Politician A may agree to vote for Politician B's choice on some issue in return for B's favorable vote on an issue of importance to A.

Long Run - A period of time sufficiently lengthy so that all the inputs to the production process can be varied in quantity. A period during which complete adjustment to changes can occur.

Lorenz Curve - A graphical representation of the degree of inequality in the distributions of income or wealth.

Lump-sum Tax - Each person pays the same amount of tax money regardless of circumstances.

Marginal Product - The marginal product of a factor of production is the increase in total output gained by employing one more unit of the factor.

Marginal Productivity Theory - A theory of the distribution of income which posits that earnings and employment of factors reflect the contribution each makes to production.

Marginal Propensity to Consume (MPC) - The proportion of additional income consumed. MPC = ΔC/ΔY.

Marginal Propensity to Save (MPS) - The proportion of additional income saved. MPS = ΔS/ΔY.

Marginal Rate of Transformation - Marginal Rate of Transformation of x for y (MRT_{xy}) measures how many units of y must be given up in order to produce one more unit of x.

Marginal Revenue Product (MRP) - MRP is the product of the amount output increases as a result of employing that factor and the amount the firm's revenue rises as a result of selling one more unit of the product. MRP = MP * MR. For firms operating in imperfectly competitive product markets, a factor's marginal revenue product measures the contribution that factor makes to the firm's revenue.

Median Voter Theorem - If voters vote for the candidate whose positions most closely mirror their own, then a vote-maximizing politician will take positions similar to those of the median voter in the electorate.

Money Market Mutual Funds and Deposit Accounts - Both mutual funds and deposit accounts are investment funds. Large numbers of people pool their money to allow for diversification and professional investment management. Mutual funds are managed by private financial companies. Deposit accounts are managed by commercial banks. Investors earn a return on their investment and have limited check-writing privileges.

Monopolistic Competition - A market structure characterized by three things: a large number of firms; ease of entry and exit; and product differentiation.

Monopoly - A market structure composed of a single firm selling a product that has no close substitutes, with high barriers to entry into the industry.

Moral Hazard - This concept says that people's behavior can be influenced by the probability of receiving certain benefits. For example, people who buy health insurance may be less likely to treat their bodies with care than people without health insurance.

Mutual Dependence Recognized - The success of the business strategy each firm follows depends on the strategies followed by all the other firms, and each firm realizes this. Consequently, each firm takes into account expected reactions by its rivals in formulating its business strategy.

National Income - The income earned by the factors of production in an entire nation.

Natural Monopoly - Refers to an industry where average costs of production fall throughout the range of production. One firm producing the entire industry output is potentially more efficient than several competing firms. Since competition will lead firms to expand output, reduce costs, and cut prices, only one firm can exist in the industry in equilibrium.

Natural Rate of Unemployment - The natural rate of unemployment can be defined in three equivalent ways: (1) It is the level of unemployment at which the expected rate of inflation equals the actual; (2) It is the level of unemployment at which the labor market is in equilibrium; (3) It is "true" full employment.

Net Exports of Goods and Services (X – M) - In the GNP accounts, net exports is equal to exports minus imports.

Net National Product - Measure of the current production of goods and services, less any replacement investment.

Normal Good - A good for which demand increases as consumer income rises.

Normal Profit - The result when a firm's accounting profit is equal to what it could earn in its next best alternative.

Oligopoly - An industry dominated by a few very large firms and in which there is "mutual dependence recognized."

Other Checkable Deposits - All financial institution deposits upon which checks can be written, excluding demand deposits. Among these are NOW accounts, ATS accounts, and credit union share drafts.

Overnight Repurchase Agreements (RP's) - Overnight inter-bank lending for the purpose of meeting reserve requirements.

Pareto Efficiency - A condition in which no reallocation of resources could be made which leaves one person better off without also making at least one person worse off.

Pareto Improvement - A reallocation of resources that makes at least one person better off without making anyone else worse off.

Perfect Competition - A market structure characterized by a large number of small firms and consumers, a homogeneous product, freedom of entry and exit, and perfect knowledge among all participants.

Personal Consumption Expenditures - In the GNP accounts, this category includes all spending by households, with the exception of purchases of new homes.

Personal Income - Income received by households.

Pigouvian Subsidy - A subsidy equal to the benefit provided to society by an activity that has positive externalities at the efficient level of output.

Pigouvian Tax - A tax equal to the cost imposed on society by an activity that has negative externalities at the efficient level of output.

Point Elasticity - Measures the responsiveness of a variable to a change in a causal factor. Point elasticity is defined for infinitesimal changes in the causal factor.

Poverty Line - Represents the minimal amount of income needed for an acceptable standard of living. Families with incomes below the line are considered poor. The poverty line is adjusted by family size, and increases each year with the change in the cost of living.

Predetermined Variable - A variable whose value is determined outside the system of equations under consideration. Predetermined variables can be either exogenous (values can be considered given) or lagged endogenous (value determined during a prior time period).

Present Value - Measures the current worth of money that will be received in the future. The present value of \$1.00 to be received n years in the future is \$1.00/ $(1 + i)^n$, where i is the rate of discount.

Price Discrimination - Price differences on units of a product not justified by differences in the cost of production.

Price-elasticity of Demand (E_p) - A measure of the responsiveness of the quantity of a good demanded to changes in price.

$$E_p = -\left(\frac{\%\Delta\, quantity\ demanded}{\%\Delta\, price}\right).$$

Price-elasticity of Supply (E_s) - A measure of the responsiveness of the quantity of a good supplied to changes in price.

$$E_s = \frac{\%\Delta\, quantity\ supplied}{\%\Delta\, price}.$$

Product Differentiation - Differences in the characteristics of products in the market. Product differences can be real or imagined.

Production Function - A schedule, graph, or equation that shows how much output of a particular product can be produced for given amounts of the inputs, assuming the most efficient production methods are used.

Proprietor's Income - In the GNP accounts, this category measures income earned by businesses that are not corporations.

Public Choice Theory - The analysis of governmental decision-making using the methodology of economics.

Purchasing Power Parity (PPP) - This doctrine states that exchange rates will adjust to equalize the purchasing power of a unit of currency in all countries.

Quintile - A one-fifth part of the whole.

Random Variable - A variable whose value is determined by chance.

Rate of Discount - The rate of interest used in discounting future values into present values. The rate measures the opportunity cost of funds to the individual.

Rational Ignorance - This concept from public choice theory is used to explain low voter turnouts or the ignorance of citizens regarding public issues. The benefit accruing to any individual of these activities often is exceeded by the costs.

Reduced Form Equation - Gives the equilibrium value of an endogenous variable. In a reduced form, the endogenous variable is a function only of the predetermined variables in the system.

Relative Poverty Standard - Measures poverty by looking at the incomes of people relative to the typical standard of living in society. People with incomes that are low relative to the average income are considered poor even if the absolute level of income is high, because they are not able to "participate" in society on an equal basis.

Rent - Payment for a factor input in excess of its transfer cost. In the GNP accounts, this category includes landlord incomes and sundry other items.

Required Reserve Ratio - Set by the Federal Reserve System, the required reserve ratio is a number from 0 to 1.00, which determines the level of reserve holdings relative to the bank's deposits.

Required Reserves - The amount of funds a bank is legally obligated to hold. Required reserves are calculated by multiplying the required reserve ratio by the amount of deposits.

Reserves - A bank's money holdings. Most reserves are held in the form of demand deposits at other banks or the Federal Reserve System. The remainder is cash in the bank's vault. Reserves are held for legal reasons (Federal Reserve System rules) and to meet depositors' demand for cash or to honor checks drawn upon the bank.

Savings Deposits - Common passbook savings accounts. They do not provide check-writing privileges.

Second-degree Price Discrimination - The selling of blocks of a product for the highest price each block can fetch.

Short Run - The short run is a period of time during which at least one of the inputs to the production process must remain fixed in quantity; the period in which all factors cannot adjust completely.

Small Denomination Time Deposits - A better-known name is certificates of deposits. They typically do not provide check-writing privileges.

Social Welfare Function - A schedule, equation, or graph that shows the well-being of society as a function of the well-being of the people who compose it.

Special Interest Group Effect - The disproportionate influence on the political process exerted by small groups with specific interests. While the aggregate benefits of certain public policies may be less to a special interest group than the aggregate costs to the rest of society, the private benefit to each member of the group may be greater than the private cost to each member of society. Special interest groups then have an incentive to fight harder.

Statutory Incidence (of a Tax) - Refers to who has the legal responsibility to pay the tax.

Structural Equation - Represents the process by which the value of an endogenous variable is determined.

Structural Unemployment - Unemployment resulting from a disparity between the skills and locations of workers needed and those of available workers. Some structural unemployment is inevitable in a dynamic economy. Structural unemployment is found at full employment, but its level can be influenced by the availability of retraining opportunities.

Substitute Goods - Goods that can be used in place of each other.

Substitution Effect - Measures the effect of a changed price on the quantity demanded of a good, assuming the consumer's real income remains constant.

Third-degree Price Discrimination - The charging of different prices for the same product in different markets when the price differences cannot be justified by differences in cost.

Time Preference - Measure of how much consumers value present consumption relative to future consumption. If the consumer requires \$1.15 in one year to compensate for giving up \$1.00 of consumption today, then the consumer's rate of time preference is \$1.15/\$1.00 - \$1.00 = 15%.

Transfer Payments - Government outlays for which a good or service is not received in return. Examples are social security benefits, welfare payments, and unemployment compensation.

Unemployment - Occurs when workers are without a job and actively seeking one. Active seeking includes such behaviors as reading want ads, contacting employers, and using the services of the Public Employment Agencies.

Unemployment Rate (UR) - The number of unemployed people (U) as a percentage of the labor force (LF). UR = U/LF.

Value of the Marginal Product - VMP is the product of the amount output increases as a result of employing that factor and the price the product sells for in the market. VMP = MP * P. For firms operating in perfectly competitive product markets, a factor's value of the marginal product measures the contribution that factor makes to the firm's revenue.

Variable Costs - Costs that vary with the level of output (such as labor and raw material costs).

Velocity of Money - The rate at which money changes hands. It is the number of times a dollar is exchanged during a year. V = PQ/M = GNP/M.

Voting Paradox - In simple majority voting, when policy A beats (polls more votes than) policy B and policy B beats policy C, but policy A paradoxically does not beat policy C, though policy A is preferable to policy B and policy C and policy B is preferable to C.

GRE

ECONOMICS TEST

TEST I

THE GRE ECONOMICS
TEST I

Time: 170 Minutes
135 Questions

DIRECTIONS: Choose the best answer for each question and mark the letter of your selection on the corresponding answer sheet.

1. If the FED adopts a rule to accommodate supply shocks so that the change in interest rates, as a result of a supply shock, is not as great as it would have been, then you would expect to see, using an IS-LM approach

   (A) aggregate demand to be steeper when drawn in Price-Output space.
   (B) aggregate demand to be less steep when drawn in Price-Output space.

   (C) aggregate supply to be, in the long run, steeper when drawn in Price-Output space.

   (D) aggregate supply to be, in the long run, less steep when drawn in Price-Output space.

   (E) no change in the relative slopes of either aggregate demand or long run aggregate supply.

2. If an own price negatively sloped demand curve is described as having constant elasticity with respect to price, the exact meaning of this is that any increase in price would bring about:

(A) an increase in quantity purchased by buyers.

(B) a decrease in quantity purchased by buyers.

(C) an increase in total expenditure by buyers.

(D) a decrease in total expenditure by buyers.

(E) a shift of the demand curve to a new position.

3. Consider a competitive industry composed of firms employing only the labor of their owners as inputs. Let this industry face a downward-sloping demand curve, and let the output price exceed the personal opportunity cost of the labor required to produce the marginal unit of output by the typical firm owner. What should the expected movement of price and market output be in the long run?

(A) Price up and quantity down.

(B) Price up and quantity up.

(C) Price down and quantity down.

(D) Price down and quantity up.

(E) Price and quantity remain unchanged.

4. Which of the following is correct?

i↓

(A) Contractionary fiscal and monetary policies both work to increase the interest rate, appreciate the domestic currency, and increase the trade deficit.

[✓ (B)] Contractionary fiscal policy reduces the interest rate, depreciates domestic currency, and reduces the trade deficit; contractionary monetary policy does the opposite.

(C) Contractionary monetary policy reduces the interest rate, depreciates domestic currency, and reduces the trade deficit; contractionary fiscal policy does the opposite.

(D) Only contractionary monetary policy has any effect on international variables.

(E) Only contractionary fiscal policy has any effect on international variables.

5. In terms of "efficient resource allocation," if grain is to be grown on two adjacent plots of land, A and B, A being naturally more fertile or productive than B (and both owned by the same landlord), then, quite apart from the landlord's desire to get maximum rent for the land:

(A) the same (nonzero) rent should be charged for both plots.

(B) no rent should be charged for either plot.

(C) a higher rent should be charged for B than for A.

(D) a higher rent should be charged for A than for B.

(E) plot A should be used intensively, plot B not at all.

6. Suppose that bond yields were 5%, 6% and 7% in three successive years during which dividend yields were 7%, 8% and 9%, respectively. Expected inflation over the three year period should therefore have been approximately equal to

(A) a steady 1% per year.

(B) a steady 2% per year.

(C) growing from 5% per year to 7% per year.

(D) growing from 7% per year to 9% per year.

(E) growing from 6% per year to 8% per year as reflected by the averages of the yearly yields.

7. In general equilibrium and in a situation of perfect competition:

equ

mc=s

(A) for each consumer, the marginal utility of each good consumed is equal to the price of that good.

mu=p

(B) for each consumer, marginal utilities of all goods consumed are proportional to the marginal costs of those goods. P=m

equ.

(C) the marginal physical product of each input is equal to the price of that input.

(D) the marginal revenue product of each input is equal to the price of the finished good it produces.

(E) the ratio of total expenditure on any good to its price equals marginal utility. consumer

mer.

P.C

8. The government levies an excise tax of 5 cents per unit sold on the sellers in a competitive industry. Both supply and demand curves have some elasticity with respect to price. When this tax is represented on the supply-and-demand diagram:

(A) the entire supply curve shifts leftward by an amount indicating 5 cents, but (unless demand is perfectly elastic) price will not rise.

(B) the entire supply curve shifts upward by an amount indicating less than 5 cents, but (unless demand is highly elastic) price will rise by the full 5 cents.

(C) the entire supply curve shifts leftward by an amount indicating less than 5 cents.

(D) the entire supply curve shifts upward by an amount indicating 5 cents, but (unless supply is perfectly elastic) any price rise will be less than 5 cents.

(E) the entire demand curve shifts upward by an amount indicating 5 cents, and price will rise by 5 cents.

9. A firm operating in circumstances of perfect competition produces and sells 200 units of output daily at a price of $7. Its average cost is $4.99. If it were to increase output and sales to 201 units daily, average cost would rise to $5.00. To maximize its profit, and from the information supplied, this firm should:

(A) increase its output, since marginal cost is approximately $6.

(B) reduce its output since marginal cost is approximately $6.

(C) remain at its present output, since marginal cost is approximately $7.

(D) certainly not reduce its output, and probably increase it, since average cost is approximately $5.

(E) increase its output, since marginal cost is approximately $5.01.

10. Consider an outside shock on the value of the dollar that causes it to depreciate. The FED could defend the dollar by

(A) increasing the money supply thereby lowering the LM curve and driving the interest rate up.

(B) increasing government spending thereby raising the IS curve and driving the interest rate up.

✓ (C) reducing the money supply thereby raising the LM curve and driving the interest rate up.

(D) increasing taxes thereby lowering the IS curve and driving the interest rate down.

(E) simultaneously increasing government spending and the money supply so that GNP climbs with a fixed interest rate.

Longer Term Policy Exp ↑
imp ↓ → SR Policy IMF

11. Suppose that you believe that the business cycle is caused exclusively by random changes in an aggregate production function and not by cyclical movement in the aggregate demand schedule. In graphically representing your theory in the standard price and quantity quadrant of aggregate supply and demand analysis, you should draw

(A) perfectly inelastic aggregate demand curves with aggregate supply showing its usual upward sloping character.

(B) perfectly inelastic aggregate supply curves with aggregate demand showing its usual downward sloping character.

(C) perfectly inelastic aggregate demand curves with perfectly elastic aggregate supply curves.

(D) perfectly inelastic aggregate supply curves with perfectly elastic aggregate demand curves.

(E) aggregate supply curves with their usual upward sloping character and aggregate demand curves with their usual downward sloping character.

12. The market price of a commodity and its costs of production are related in which way?

(A) If price is below cost of production, there will be a shift in the demand curve.

[✓ (B)] Costs of production influence the quantity of goods that producers will offer for sale at each and any possible price.

(C) Price can never fall below costs of production.

(D) Price can never rise above costs of production.

(E) There is no significant relationship at all between price and production costs.

13. A firm operating in conditions of perfect competition is producing a daily output such that its total revenue is $5000. That output is the profit-maximizing output. The firm's average cost is $8, its marginal cost is $10, and its average variable cost is $5. Its daily output is:

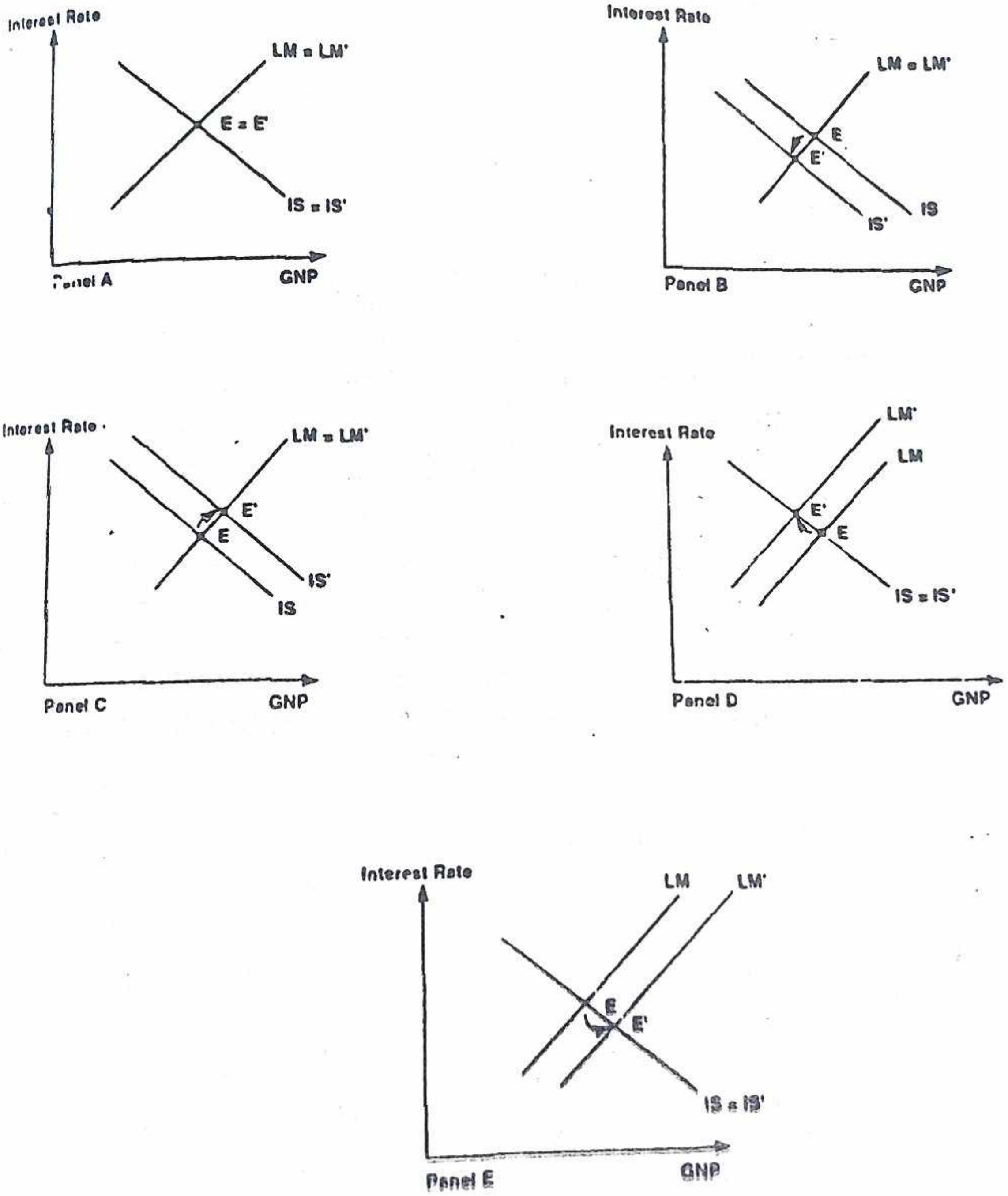
(A) 200 units.

(B) 500 units.

(C) 625 units.

(D) 1000 units.

(E) 1500 units.


Interest Rate
LM = LM'
E = E'
IS = IS'
Panel A
GNP
Interest Rate
LM = LM'
E
E'
IS'
IS
Panel B
GNP
Interest Rate
LM = LM'
E'
E
IS'
IS
Panel C
GNP
Interest Rate
LM'
LM
E'
E
IS = IS'
Panel D
GNP
Interest Rate
LM
LM'
E
E'
IS = IS'
Panel E
GNP

Use the figure above to answer the following questions:

14. Panel A of the figure drawn above (Figure 1) shows an IS-LM representation of an economy initially in equilibrium at E. Which panel shows the effect of an appreciation in the real exchange rate for this economy, under the usual assumptions? In each panel, IS' and LM' indicates the IS and LM curves that are in play after the exchange rate has changed.

(A) Panel A.
(B) Panel B.
(C) Panel C.
(D) Panel D.
(E) Panel E.

15. If the market rate of interest rises, other things equal, the present discounted value of any given capital asset should:

(A) rise, and the more the asset's expected revenues extend far into the future, the more it will rise.

(B) rise, and the more the asset's expected revenues accrue in the immediate rather than the remote future, the more it will rise.

(C) fall, and the more the asset's expected revenues extend far into the future, and the more it will fall.

(D) fall, and the more the asset's expected revenues accrue in the immediate rather than the remote future, the more it will fall.

(E) not be changed at all.

$\frac{R}{(1+\delta)^3}$

16. In the short run, output is determined almost exclusively by

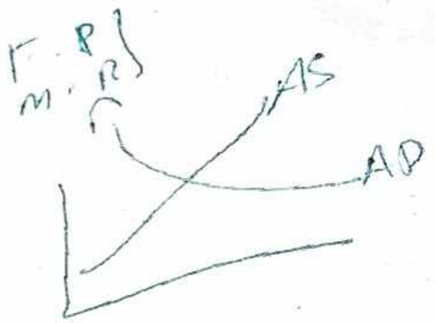
(A) the level of the capital stock. $\overline{K}$

(B) the level of current investment.

(C) the level of government spending.

(D) recent changes in technology.

[✓ (E) the sum total of aggregate demand.]



17. Alfred Marshall's concepts of "momentary," "short-run," and "long-run" supply curves were intended to bring out which fact?

(A) Over a long period of time, gradual increases in skill and improvements in the art of production tend to bring down the price of any commodity.

(B) Price increases as cost of transport to any given market increases.

(C) The extent to which quantity supplied will respond to a given price or demand change depends on the amount of time given producers to adjust their operations to this change.

(D) In order to make the supply-curve idea meaningful, it is necessary to speak of the quantity that will be supplied per period of time.

(E) Although demand may exert some short-run influence, ultimately the price of any commodity must be determined by the cost of its production.

18. The "long-run" equilibrium condition, "price equal to minimum per unit (average) cost," used in perfect competition theory:

(A) is a rule which the firm need not consider in the short run, but must obey in the long run if it wants to choose the output level that will maximize its profit.

(B) is a rule the firm must obey in the short run only if it wants to choose the output level that will maximize its profit.

(C) is not a rule any profit-maximizing firm need consider either in the short or the long run, but indicates a situation toward which it is said all firms will be pushed in the long run.

(D) is a rule any profit-maximizing firm must respect in both the short and the long run.

(E) has no status either as a profit-maximizing rule or as a situation toward which firms will tend to be pushed, whether in the short or the long run.

19. Had net exports in the United States been reduced to 0 by contractionary fiscal policy through the first half of the 1980's, the U.S. economy would have

(A) been producing output well above the full employment level of GNP.

(B) been producing output slightly above the full employment level of GNP.

(C) been producing output nearly equal to the full employment level of GNP.

(D) been producing output slightly lower than the full employment level of GNP.

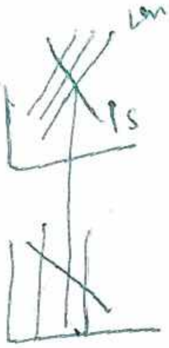
(E) been producing output considerably lower than the full employment level of GNP.

20. Suppose that the demand for money were to become less sensitive to changes in the interest rate. You would then draw

(A) a flatter LM curve and a more vertical aggregate demand curve.

(B) flatter LM and aggregate demand curves.

[✓ (C)] a flatter aggregate demand curve and a more vertical LM curve.



(D) a flatter LM curve, but with no corresponding change in the slope of the aggregate demand curve.

(E) a steeper LM curve, but with no corresponding change in the slope of the aggregate demand curve.

21. The internal rate of return of any capital good could reasonably be described as:

IRR Definition

[✓ (A)] that particular rate of interest at which the capital good would just be worth buying or building, i.e., the present value of revenues would just be matched by costs.

(B) the dollar amount of profit that would accrue if that capital good were bought or built.

(C) the same thing as the market rate of interest.

(D) the physical increase in output (as distinct from the money value) that would accrue if that capital good were bought or built.

(E) the percentage figure obtained by adding up all net revenues that would accrue from the capital good and dividing this total by its cost.

22. Which of the following statements is consistent with the new classical theory?

(A) If prices and wages are both flexible and expectations are rational, then policy is ineffective.

(B) If prices but not necessarily wages are flexible and expectations are rational, then policy is ineffective.

(C) If wages but not necessarily prices are flexible and expectations are rational, then policy is ineffective.

(D) If expectations are rational, then policy is ineffective regardless of wage and price behavior.

(E) If prices and wages are both flexible and expectations are rational, then monetary but not fiscal policy can be effective.

23. Suppose that net exports were to become less sensitive to changes in the interest rate. You would then draw

(A) flatter IS and aggregate demand curves.

(B) flatter LM and aggregate demand curves.

(C) a flatter IS curve and a correspondingly steeper aggregate demand curve.

(D) steeper IS and aggregate demand curves.

(E) a steeper IS curve and a correspondingly flatter aggregate demand curve.

24. Consumers have budgeted a fixed money amount to buy a certain commodity. Within a certain range of prices, they will spend neither more nor less than this amount on it. Their demand in this price range would properly be designated as:

(A) in equilibrium.

(B) perfectly elastic.

(C) perfectly inelastic.

(D) highly inelastic but not perfectly so.

(E) unit-elastic.

25. An economy operating at full employment enters a period of high anticipated inflation. Which of the following statements accurately describes the likely result?

(A) Most people increase saving to be better prepared for the higher prices that they know are coming, thereby increasing capital investment, stimulating the rate of economic growth, and supporting lower interest rates.

(B) Most people decrease saving to increase current consumption and capital investment, thereby stimulating economic growth and supporting lower interest rates.

(C) Most people decrease saving to increase current consumption, thereby slowing capital investment, slowing the rate of economic growth, and supporting lower interest rates.

(D) Most people increase saving to be better prepared for the higher prices that they know are coming, thereby reducing capital investment, slowing the rate of economic growth, and supporting lower interest rates.

(D) Most people decrease saving to increase current consumption, thereby slowing capital investment, slowing the rate of economic growth, and supporting higher interest rates.

26. Let the derived demand for corporate and noncorporate capital both be represented by

$$r = .50 - .005K.$$

Let the market rate of interest equal 10% (i.e., let r = .1) and let the government consider taxing the return to corporate capital at a 33% tax rate. Starting from an initial equilibrium and maintaining the same total capital stock, describe the after tax equilibrium that should be expected in the long run.

(A) The before tax rate of return equalling 10% in both sectors with each sector employing 80 units of capital.

(B) The before tax rate of return equalling 10% in both sectors with the corporate sector employing 76 units of capital and the noncorporate sector employing 84 units.

(C) The after tax rate of return equalling 8% in both sectors with each sector employing 80 units of capital.

(D) The after tax rate of return equalling 8% in both sectors with the corporate sector employing 76 units of capital and the noncorporate sector employing 84 units.

(E) The after tax rate of return equalling 12% in both sectors with the corporate sector employing 84 units of capital and the noncorporate sector employing 76 units.

27. One argument for tariffs is that they should be imposed to help a domestic producer to compete when the level of foreign wages is significantly below the level of domestic wages. This argument:

(A) is conceded by most economists to be correct, although sometimes exaggerated in order to justify some level of tariff protection.

(B) is fallacious because there are almost no instances in which there is any real difference between the level of foreign and domestic wages.

(C) ignores the fact that differences in relative costs constitute the principal basis for international trade.

(D) may be correct with respect to money wages at home and abroad, but is not correct with respect to real wages.

(E) is true only in terms of certainty equivalent quotas.

28. Which of the following provisions of the Tax Reform Act of 1986 worked to lower the effective cost of capital?

(A) A general reduction in the tax rate applied to corporate profits.

(B) The elimination of the investment tax credit.

(C) A reduced emphasis on accelerated depreciation applied to a wide variety of types of capital, particularly building and equipment.

(D) The inclusion of intangible capital in the corporate income tax base.

(E) A contraction of the effective interest rate deduction against taxable corporate income.

29. You have $20 per week available to spend as you wish on commodities A and B. The prices of these commodities, the quantities you now buy, and your evaluation of the utility provided by these quantities, are as follows:

	Unit Price	Total Bought	Utility	Marginal Utility
A	70¢	20	500	30
B	50¢	12	1,000	20

For maximum satisfaction, assuming diminishing marginal utility, you should:

(A) buy less of A, more of B.

(B) buy same quantity of A, more of B.

(C) buy more of A, less of B.

(D) buy more of A, same quantity of B.

(E) remain in your present position, since that position is the best attainable one.

30. If the price a firm obtains for its output exceeds the marginal cost associated with that particular output, maximum-profit rules would require that firm to:

(A) increase its output in both perfect and imperfect competition.

(B) increase its output in perfect but not necessarily in imperfect competition.

(C) increase its output in imperfect but not necessarily in perfect competition.

(D) decrease its output in both perfect and imperfect competition.

(E) increase price, not output, in both perfect and imperfect competition.

31. A monetary policy that tries to maintain fairly stable interest rates tends to make

(A) random variation in the IS curve more harmful in terms of variation in interest rates.

(B) random variation in the IS curve more harmful in terms of variation in the international capital account.

(C) random variation in the IS curve more harmful in terms of variation in GNP.

(D) random variation in the IS curve less harmful in terms of variation of GNP.

(E) random variation in the IS curve totally harmless in terms of variation in either interest rates or GNP.

32. An absolute "precondition for growth" is the:

(A) development of some excess of income over consumption.

(B) creation of a surplus labor force for employment in manufacturing.

(C) discovery and exploitation of some internal economics.

(D) cultural acceptance of free enterprise principles of economic behavior.

(E) development of manufacturing to the point where it can begin to supplant agriculture.

33. Which of the following functions might be an appropriate representation of a consumption function that reflects the implications of a forward looking theory of consumption? In each, C represents consumption, Y represents income, and R represents the interest rate expressed in terms of a decimal fraction.

(A) $C = 230 + .71Y + 1000R$.

(B) $C = 420 + 1.3Y - 1000R$.

(C) $C = 276 - 1.3Y - 1000R$.

(D) $C = 350 + .65Y - 1500R$.

(E) $C = 220 - .73Y + 1500R$.

34. If the land suited for growing wheat is fixed in quantity, the supply curve for wheat:

(A) should still have some price elasticity--i.e., indicate that as price rises, supply quantity offered would increase.

(B) must rise vertically, i.e., be perfectly inelastic.

(C) may in consequence be backward-bending.

(D) might be perfectly horizontal, since the supply of wheat and the supply of wheat-growing land are two different things.

(E) will not be influenced by the price offered for wheat.

35. The essential characteristic of all cases of imperfect competition is that the single firm's:

(A) demand curve has a downward tilt.

(B) marginal revenue exceeds the price it charges.

(C) average cost curve falls over a substantial or large range of outputs.

(D) product is "differentiated" from one firm to the next.

(E) average cost curve rises over a substantial or large range of outputs.

36. Let the LM curve be subject to random shocks. As government spending becomes more (positively) responsive to the gap between actual and potential GNP, the desirability of setting monetary policy to achieve

(A) an interest rate target necessarily increases.

(B) a GNP target necessarily increases.

(C) an exchange rate target necessarily increases.

(D) a money supply target necessarily increases.

(E) an employment target necessarily increases.

37. The principal concern of maintaining the steady state according to the Solow growth model is determining the:

(A) rate of increase in the labor force needed to just match the scheduled increase in investment spending.

(B) rate of saving needed to just balance against the rate of increase in the labor force.

(C) rate of interest that will attract a volume of investment just sufficient to maintain full employment.

(D) maximum rate of growth in output that is possible without setting off inflationary price increases.

(E) rate of investment spending needed to just balance against the fraction on income which the public wishes to save.

38. Let the consumption function be given by C = .85 + .8YDP with permanent disposable income specified according to YDP = .75YD + .25YD(-1). Let there be a permanent $1000 increase in disposable income. Two years later, consumption will have increased by

(A) $1000.

(B) $850.

(C) $800.

(D) something between $600 and $800.

(E) $600.

39. If a commodity's return is in the nature of pure economic rent and a tax is imposed on the commodity, then:

(A) the incidence of the tax is borne wholly by the suppliers, and price to the buyers will not change.

(B) the incidence is borne wholly by the buyers.

(C) the incidence will be shared between the suppliers and the buyers.

(D) the output of the commodity will fall and its price will rise.

(E) the output of the commodity will not fall but its price will rise.

40. A firm operating in a situation of imperfect competition finds that at its present output level, marginal revenue is \$2 and average cost is \$1.75, this being the minimum or lowest-attainable value of average cost. For maximum profit, this firm should:

(A) increase price.

(B) decrease price.

(C) decrease output and sales.

(D) leave price and output unchanged.

(E) perhaps do any of these things--information given is insufficient to tell.

41. If a forecaster predicts a rate of economic growth that is smaller than the average of other forecasters, you should expect to see that forecaster also issue

(A) forecasts for the deficit and interest rates that are higher than the average.

(B) forecasts for the deficit that are higher than the average and forecasts for interest rates that are lower than the average.

(C) forecasts for the deficit and interest rates that are lower than the average.

(D) forecasts for the deficit that are lower than the average and forecasts for interest rates that are higher than the average.

(E) forecasts of deficits and interest rates that are nonetheless close to the average.

42. If a nation's capital-output ratio gradually increases over time, this indicates that:

(A) the share of capital-owners in total output is increasing.

(B) the diminishing-returns stage has not yet been reached with respect to capital.

(C) the marginal physical product of capital must have reached zero.

(D) technological progress must be improving the productivity of capital.

(E) the law of diminishing returns is operating with respect to capital's productivity.

43. Let the consumption function be defined by $C = .85 + .8YDP$ with permanent disposable income specified according to $YDP = .75YD + .25YD(-1)$. Which of the following is true?

(A) The long run MPC = .85 while the short run MPC = .6.

(B) The long run MPC = .8 while the short run MPC = .75.

(C) The long run MPC = .8 while the short run MPC = .6.

(D) The long run MPC = .8 while the short run MPC lies somewhere between .25 and .75.

(E) Both the long run MPC and the short run MPC equal .8.

44. The results observed in the dynamic-cobweb theory of supply and demand depend, in large part, on the assumption that suppliers decide the quantity that they will send to the market in the current period on the basis of the price that cleared the market in the previous period. The process

(A) becomes more likely to converge to equilibrium as demand becomes more inelastic.

(B) becomes more likely to converge to equilibrium as demand becomes more elastic.

(C) becomes more likely to converge to equilibrium as supply becomes more elastic.

(D) becomes more likely to converge to equilibrium as supply becomes more elastic while demand becomes more inelastic.

(E) will converge to equilibrium only if demand is perfectly inelastic.

45. If a firm's marginal revenue exceeds its marginal cost, maximum-profit rules require that firm to:

(A) increase its output in both perfect and imperfect competition.

(B) increase its output in perfect but not necessarily in imperfect competition.

(C) increase its output in imperfect but not necessarily in perfect competition.

(D) decrease its output, in both perfect and imperfect competition.

(E) increase price, not output, in both perfect and imperfect competition.

46. Suppose that the correlation between government spending and the difference between actual and potential real GNP were to become more strongly correlated; i.e., suppose that an (de)-increase in the real GNP gap causes an enlarged (de)increase in government spending.

(A) The aggregate demand curve should become steeper because monetary policy is less effective.

(B) The aggregate demand curve should become steeper because monetary policy is more effective.

(C) The aggregate demand curve should become flatter because monetary policy is more effective.

(D) The aggregate demand curve should become flatter because monetary policy is less effective.

(E) There should be no change in the slope of the aggregate demand curve.

47. A general sales tax, without any exempted commodities, is considered to be:

(A) a progressive tax because it applies to luxuries as well as necessities.

(B) a regressive tax because wealthy people spend a smaller percentage of their total income on taxed commodities, and hence the proportion of tax payments to income is greater for poor people.

(C) a progressive tax because wealthy people spend more than poor people.

(D) a regressive tax because more money is collected from a poor person than from a rich one.

(E) a proportional tax because everybody pays the same tax percentage on each purchase.

48. Consider the economy described by the equations recorded below.

Potential income: $Y^{*} = 2000$

Initial price level: $P = 1.00$

Aggregate demand: $Y = 1400 + 1.5G + .75[M/P]$

Price adjustment: $\pi = \{(Y_{-1} - Y^{*})/Y^{*}\} + Z2$

Government spending: $G = 100$

Money Supply: $M = 600$

In these equations, Z2 represents the potential for a random price shock to affect the price adjustment equation. It is 0 in the absence of such a shock. A temporary shock that sets Z2 equal to .2 (i.e., a 20% shock) should eventually lead to equilibrium with

(A) the price level equal to 1.2 and GNP = 2000.

(B) the price level equal to 1.0 and GNP = 2400.

(C) the price level equal to 1.0 and GNP = 2000.

(D) the price level equal to 1.2 and GNP = 2400.

(E) the price level equal to 1.2 and GNP = 1600.

49. Suppose that the demand curve for wheat is perfectly inelastic with respect to price. A tax of 50 cents per bushel sold is imposed on suppliers. Then:

(A) price will rise, but by less than 50 cents, and there will probably be some reduction in the quantity bought and sold.

(B) price will rise by the full 50 cents, but there will be no reduction in the quantity bought and sold.

(C) price will rise, but by less than 50 cents, and there will be no reduction in the quantity bought and sold.

(D) price will rise by the full 50 cents, and there will definitely be a reduction in the quantity bought and sold.

(E) price will fall, but by less than 50 cents, and there will be no reduction in the quantity bought and sold.

50. Given the usual downward-sloping shape of a market demand curve, what should be the effect of a tax that affects only the fixed cost of every firm remaining in a competitive market on the price received and the quantity supplied by each competitive firm?

(A) Price up and quantity up.

(B) Price up and quantity down.

(C) Price down and quantity up.

(D) Price down and quantity down.

(E) Price and quantity remain unchanged.

51. An argument that is consistent with the statement that deficits caused by tax cuts should not cause interest rates to climb is:

(A) consumption will not respond in anticipation of a counterbalancing increase in taxes sometime in the future.

(B) investment will increase in anticipation of a counterbalancing increase in corporate taxes sometime in the future.

(C) investment will not respond because of an impression that the tax cut is permanent.

(D) any increase in consumption will be matched by a corresponding decrease in net exports.

(E) any increase in the interest rate will be negated by an adjustment in the foreign exchange rate.

52. Let there be 99 people in an economy. Let 50 of them individually value a public good G according to

$$P = 1 - .01G:$$

Let the other 49 value G according to

$$P = 2 - .02 G.$$

The marginal cost of providing G is constant at \$74.00. What is the pareto optimal level of provision of G?

(A) Zero units because nobody wants any at a price of \$74.00.

(B) 10 units.

(C) 25.25 units.

(D) 50 units.

(E) 62.67 units.

53. A firm with monopoly power has just been sold on the open market to an investor, for whom the cost of money was the 10% interest rate prevailing in the financial markets. The monopolist was, prior to the sale, earning a 20% annual return on \$1 million in physical capital, including implicit returns paid to her for her entrepreneurial services. Assuming that there is some risk that the firm's monopoly power will be undercut, the price paid for the firm should have been

(A) something more than \$2 million.

(B) exactly \$2 million.

(C) something between \$1 million and \$2 million.

(D) exactly \$1 million.

(E) something less than \$1 million.

54. Suppose that long term labor contracts hold the real wage above equilibrium. Which of the following statements would then hold?

(A) Fiscal policy stimulus would perversely increase the excess supply of labor.

(B) Monetary stimulus would perversely increase the excess supply of labor.

(C) Monetary stimulus would be totally ineffective to change the excess supply of labor.

(D) Fiscal stimulus only would reduce the excess supply of labor.

(E) Both fiscal and monetary stimulus could reduce the excess supply of labor.

55. A substantial fall in the price of the dollar in foreign currencies (e.g., the price of the dollar in francs) could be expected to affect physical quantities of exports from the United States and imports into the United States as follows:

(A) increase both exports and imports.

(B) increase exports, decrease imports.

(C) decrease both exports and imports.

(D) decrease exports, increase imports.

(E) have no perceptible effect on either imports or exports.

56. Let investment be $I = 500 - 1200R + .4Y$, $C = 200 + .75YD$, the personal income tax rate equal 33%, and $.8Y - 2400 = (M/P)$. If government spending equals 500, and the nominal money supply equals 100, which of the following represent the corresponding aggregate demand curve for price levels of 1 or above?

(A) Y = 2000 - .833(M/P).

(B) Y = 2000 - .667(M/P).

(C) Y = .833(M/P) - 2000.

(D) Y = .833(M/P) + 2000.

(E) Y = .667(M/P) - 2000.

57. If the marginal utility of a commodity is zero, then:

(A) total utility for this commodity has reached a maximum.

(B) the commodity in question has no utility, i.e., it is not one that consumers want to use.

(C) the paradox of value must be involved.

(D) the consumer has reached his or her equilibrium position with respect to purchase of this commodity.

(E) total utility for this commodity must be zero also.

58. If a monopoly discovers that demand for its product is inelastic with respect to price, in the price-and-output range in which it is selling, and if it seeks to maximize its profit, it should:

(A) remain at its present position.

(B) always lower its price and seek to increase its sale.

(C) always raise its price, even at the cost of a sales reduction.

(D) raise its price, but only if that price reduction will not reduce its sales.

(E) raise its price to increase sales.

59. If unemployment fell from 7.7% to 5.8% over the course of two years,

(A) then inflationary concerns should be voiced, even if the natural rate of unemployment were 5.0%.

(B) then inflationary concerns should be voiced if the natural rate of unemployment were 6.0%.

(C) then concerns over a growth recession should be voiced, even if the natural rate were 6.0%.

(D) then concerns over a growth recession should be voiced if the natural rate were 5.0%.

(E) there would still be sufficient slack to reduce unemployment further without raising the spector of inflation even if the natural rate were 6.5%.

60. A difference between a tariff on an imported good and a quota on such a good is:

(A) that a quota can never be made to yield revenue for the government, whereas a tariff can.

(B) that a tariff can never be made to yield revenue for the government, whereas a quota can.

(C) that a quota can be used to shut off all, or virtually all, the inflow of the imported good, whereas a tariff cannot.

(D) that a tariff can be used to shut off all, or virtualiy all, the inflow of the imported good, whereas a quota cannot.

(E) that a quantity equivalent quota will only generate the same revenue if correctly priced, (for example, by an auction for import licenses).

61. Just as would be predicted by a forward looking theory of investment, response to the Tax Reform Act of 1986, which contained an increase in taxes on investment spending, and became effecttive in January 1987, resulted in

(A) an increase in investment in business equipment for the first quarter of 1986, following a reduction of similar magnitude for the last quarter of 1985.

(B) an increase in investment in business equipment appearing suddenly in January of 1986.

(C) a reduction in investment in business equipment for the first quarter of 1987, following an increase of similar magnitude for the last quarter of 1986.

(D) a reduction in investment in business equipment appearing suddenly in January of 1986.

(E) almost no change in investment in business equipment, either late in 1985, or early in 1986.

62. You regard goods X and Y as substitutes, but not perfect substitutes. If the price of X rises and there is some income effect from this price rise, then this income effect should induce you to (barring the special case of an inferior good):

(A) purchase more of good Y.

(B) purchase less of good Y.

(C) purchase the same amount of Y.

(D) purchase more Y only if the price of X exceeds that of Y.

(E) purchase some new, but indeterminable, amount of good Y.

63. The relationship between marginal revenue and the price elasticity of demand is this: when marginal revenue is

(A) negative, demand must be inelastic.

(B) zero, demand must be inelastic.

(C) positive, demand must be inelastic.

(D) negative, demand must be unit-elastic.

(E) positive, demand must be perfectly elastic.

64. Let the reserve requirement be .15 for deposits. Assume that there are no excess reserves. If currency demand equals 40% of deposits, and total reserves equal $60 billion, then an open market sale of $1.5 billion in government bonds should

(A) increase the money supply from $560 billion to $574 billion.

(B) increase the money supply from $400 billion to $410 billion.

(C) reduce the money supply from $400 billion to $390 billion.

(D) reduce the money supply from $160 billion to $156 billion.

(E) reduce the money supply from $560 billion to $546 billion.

65. The idea of "consumer surplus" reflects the fact that

(A) in some purchases, the gain consumers obtain from buying exceeds the gain suppliers obtain from selling.

(B) the purchase of many goods is an immense bargain for consumers, because they would pay far more than they actually do in order to get them, if necessary.

(C) the marginal utility of the first units of a product consumed may considerably exceed the total utility which this product supplies.

(D) total utility increases either when consumer incomes rise or when the prices they must pay for goods fall.

(E) when demand is inelastic with respect to price, buyers can obtain a larger quantity for an expenditure of less money.

66. A firm operating in circumstances of perfect competition finds that, at its best possible operating position (for any nonzero output), its total revenue does not cover its total cost, although this revenue is more than sufficient to cover fixed cost. This firm:

(A) is incurring a loss, and would improve its position by shutting down.

(B) is incurring a loss, but minimizes that loss by continuing to operate at its present position.

(C) is incurring a loss, but could reduce or perhaps remove it by increasing its production and sales.

(D) is incurring a loss, but the information given is not sufficient to indicate whether it would minimize that loss by continuing to operate or by shutting down.

(E) may be incurring a loss or earning a profit -the information furnished is insufficient to tell.

67. Let the supply schedule for a firm be $Yi = 15(Pi-PE) + 7$ where Pi is defined as the actual price charged, and the best guess of the expected price, PE, is related to the forecast price PF according to $PE = PF + .7(Pi-PF)$. If there are 200 firms, and theforecast price matches the actual, then output must equal

(A) 7.

(B) 15.

(C) 700.

(D) 1400.

(E) 2000.

68. In a period of deflation (i.e. of generally falling prices), the "real" rate of interest obtained by a lender on money lent

(A) will exceed the nominal rate.

(B) will become a negative figure.

(C) will fall below the stated rate, although not to the extent of becoming a negative figure.

(D) will become a meaningless or incalculable figure.

(E) will be less than the nominal rate.

69. Suppose that net exports were to become more sensitive to changes in the interest rate. You would reflect this change by drawing

(A) steeper LM curves.

(B) flatter LM curves.

(C) steeper IS curves.

(D) flatter IS curves.

(E) IS and LM curves exactly as before.

70. Suppose that net exports were to become more sensitive to changes in the interest rate. You would expect to see (with respect to changing output)

(A) both fiscal and monetary policy become more effective.

(B) both fiscal and monetary policy become less effective.

(C) monetary policy become more effective, while fiscal policy become less effective.

(D) fiscal policy become more effective, while monetary policy become less effective.

(E) fiscal policy become more effective, while monetary policy does not change.

71. Suppose that there were a sudden increase in the tax rates built into the federal income tax. You should expect, based on IS and LM curves with some appropriate slope, that:

(A) GNP and interest rates would both climb.

(B) GNP and interest rates would both fall.

(C) interest rates would climb, but the effect on GNP would be ambiguous.

(D) GNP would climb and interest rates would fall.

(E) GNP would fall but the effect on interest rates would be ambiguous.

72. A firm operating in circumstances of perfect competition faces a market price of $10. It is producing 2000 units of output daily, at a total cost of $19,000. This firm:

(A) should increase the amount of its output to improve its profit position.

(B) should reduce the amount of its output to improve its profit position.

(C) should shut down to minimize its loss.

(D) although making some profit, may or may not be at the output level yielding maximum profit--the information furnished is not sufficient to cover this point.

(E) is apparently now at its maximum-profit position.

73. Net exports are most likely to be

(A) positively correlated with both interest rates and GNP.

(B) positively correlated with interest rates, but fairly independent of GNP.

(C) positively correlated with GNP, but fairly independent of interest rates.

(D) negatively correlated with GNP, but positively correlated with interest rates.

(E) negatively correlated with both interest rates and GNP.

74. Let Y = 600 (P-PF) + 1000, (where P is price level, PF is forecasted price level, and Y is output), be the Lucas supply curve with aggregate demand given by Y = 700 + .75(M/P), where M is money supply. What would be the effect of an announced and implemented increase in the money supply from \$400 to \$440, given that in initial equilibrium P = PF and only unannounced factors can cause PF to differ from P?

(A) Output would increase 10% to 1100 while the price level will rise the same 10% to 1.1.

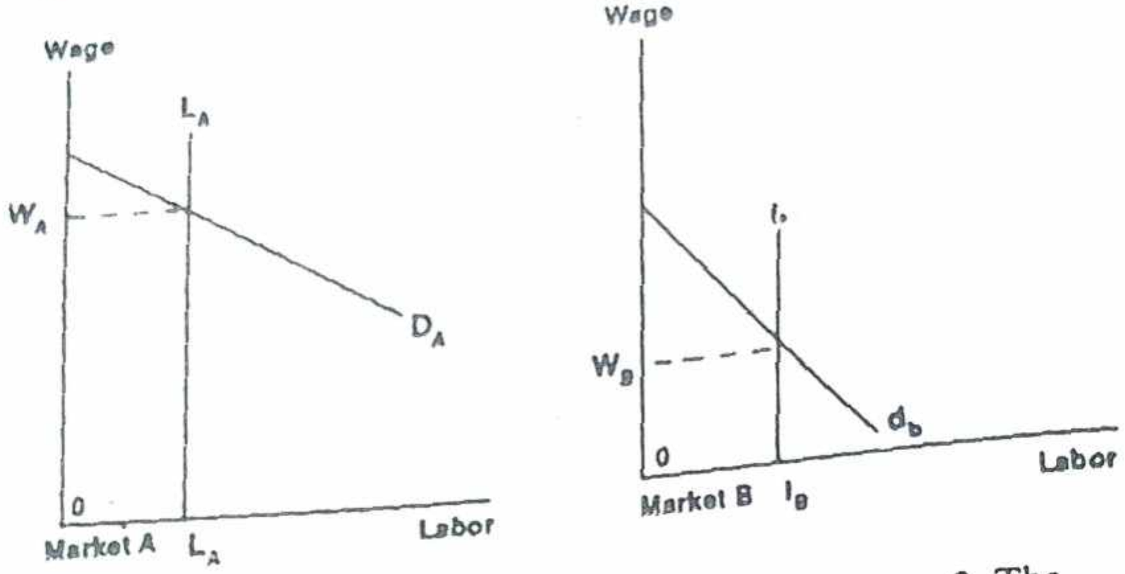
(B) Output would increase 10% to 1100 while the price level would be held constant at 1.0.

(C) Output would hold constant at 1000 while the price level would rise 10% to 1.1.

(D) Output and prices would hold steady at 1000 and 1.0, respectively, until the FED changed the policy back to M = \$400.

(E) Output would fall by 10% because the price level would necessarily increase by 10% to 1.1.

Figure 2.



75. Consider the two labor markets illustrated in Figure 2. The supply of homogeneous labor is inelastic in both markets at L_A and l_b, respectively, so the wage equilibrium shows $W_A > W_B$. Assume that the labor in Market B is prevented from entering Market A only by the discriminatory practices of the common employers L_A and l_b; labor supplied to both is otherwise identical. Which of the following accurately reflects the likely outcome of removing that discrimination?

(A) The wage paid to those originally employed in Market A should fall, the wage paid to those originally employed in Market B should rise, but the total income of all labor should fall.

(B) The wage paid to those originally employed in Market A should fall, the wage paid to those originally employed in Market B should rise, and the total income of all labor could rise or fall.

(C) The wage paid to those originally employed in Market A should rise further, the wage paid to those originally employed in Market B should fall further, and the total product of all labor should fall.

(D) The wage paid to those originally employed in Market A should rise further, the wage paid to those originally employed in Market B should fall further, and the total income of all labor should rise.

(E) The wage paid to those originally employed in Market A should remain the same, even as the wage paid to those originally employed in Market B rises: total income of all labor should fall.

76. Suppose that you wanted to correctly represent net exports [X] as a function of domestic GNP [Y] and the domestic interest rate [r]. You would hypothesize a relationship that reflected:

(A) a positive correlation between X and both Y and r.

(B) a negative correlation between X and both Y and r.

(C) a negative correlation between X and Y, but a positive correlation between X and r.

(D) a positive correlation between X and Y, but a negative correlation between X and r.

(E) no precise correlation between X and Y, but a strong negative correlation between X and r.

77. Consider a firm in a competitive market selling 10,000 units at a price of $2.00 per unit. Its total cost is $16,000, and it is producing at the minimum of its average cost curve. To maximize profits, this firm should

(A) change nothing because it is already maximizing profits.

(B) increase its price and output.

(C) increase its output and sales.

(D) reduce its output and sales.

(E) shut down to maximize profits by minimizing losses.

78. If the short-run marginal cost curve of a typical firm in a competitive industry should fall continuously over a substantial range of increasing outputs, the likely consequence is that:

(A) new firms must enter that industry.

(B) the profit earned by that typical firm can be expected to fall.

(C) the marginal cost of that firm will exceed its average cost through the output range in question.

(D) the total amount of fixed cost which this firm must pay will fall.

(E) pure (or perfect) competition is likely to give way to imperfect competition.

79. Let the marginal revenue product of labor be 30 - .25H, and the opportunity cost of leisure be -20 + .75H, where H is quantity of labor. If the wage were set equal to $20.00, then

(A) 40 units of labor would be employed with an excess demand for labor of 13.3 units at a $20.00 wage.

(B) 40 units of labor would be employed with an excess supply of labor of 13.3 units at a $20.00 wage.

(C) 53.3 units of labor would be employed with an excess demand for labor of 13.3 units at a $20.00 wage.

(D) 53.3 units of labor would be employed with an excess supply of labor of 13.3 units at a $20.00 wage.

(E) 50 units of labor would be employed with no excess supply of labor at any wage between $20.00 and $17.50.

80. A monopolist, who faces a downward-sloping demand curve, produces 50 units of a good and receives $100 in total revenue. The monopolist faces a rising marginal cost and when she produces 50 units, the marginal cost is $2.00. Which of the following is true?

(A) The monopolist is producing at the profit maximizing quantity

(B) The monopolist could increase profits if she cuts back on production

(C) The monopolist could increase profits if she increases production

(D) The monopolist could increase profit if she decreases price

(E) No conclusion can be made with the above information

81. Let an income earned above a specified level of exemption be taxed at a constant rate t; i.e., let tax revenue (T) be related to income (Y) and exemptions (E) according to

$$T = t(Y-E) = tY - tE.$$

Assume that this formula holds for $Y<E$. This tax system is

(A) proportional on the margin and regressive on the average.

(B) proportional on the margin and progressive on the average.

(C) constant on the margin and regressive on the average.

(D) regressive on the margin and constant on the average.

(E) progressive on both the margin and the average.

82. Let taxes be set equal to T, consumption be given by $C = a-b(Y-T)$, investment and government spending be exogenous, and net exports characterized by $X = g-mY$. Suppose that T and G both increase by $10 billion. How much would equilibrium GNP increase?

(A) It should increase by $10 billion.

(B) It should increase by less than $10 billion.

(C) It should increase by more than $10 billion.

(D) It should be unaffected since the federal deficit would be unchanged.

(E) It might increase more or less than $10 billion, but by an amount that cannot be determined without knowing the values assumed by a, b, g, and m.

83. Beef supplies are sharply reduced because of drought in the beef-raising states, and consumers turn to pork as a substitute for beef. In the beef market, this event would be described, in supply-and-demand terms, as:

(A) a leftward (or downward) shift in the demand curve.

(B) a leftward (or upward) shift in the supply curve.

(C) a rightward (or upward) shift in the demand curve.

(D) a rightward (or downward) shift in the supply curve.

(E) both a leftward (or downward) shift in the demand curve and a leftward (or upward) shift in the supply curve.

84. Suppose that some sort of technological advance in the banking industry reduces the transactions demand for money. In the absence of any change in the supply of money, and given the usual shape of an IS curve, this advance should result in

(A) an expansion in GNP as interest rates fall.

(B) an expansion in GNP even though interest rates remain the same.

(C) an expansion in GNP as interest rates climb.

(D) a contraction in GNP as interest rates climb.

(E) a contraction in GNP even though interest rates remain the same.

85. In a certain plant, marginal cost is $2 at 400 units of output weekly, and it is $2.50 at 500 units of output. Referring to output increases within this 400-500 range, average cost:

(A) must rise.

(B) must fall.

(C) must remain constant.

(D) may rise, or fall, or both, but cannot remain constant throughout this output range.

(E) may rise, then fall, with a net increase over the 100 unit range.

86. Which of the following statements is true?

(A) The open economy multiplier is smaller than the closed economy multiplier for investment, but larger for government spending.

(B) The open economy multiplier is smaller than the closed economy multiplier for government spending, but larger for investment.

(C) The open economy multiplier is smaller than the closed economy multiplier for both government spending and investment.

(D) The open economy multiplier is larger than the closed economy multiplier for both government spending and investment.

(E) The open economy multiplier is smaller than the closed economy multiplier for government spending, but they are equal for investment.

87. A trade union which wants to simultaneously raise wages for its members and maintain as much employment as possible would be helped by:

(A) an elastic derived demand for labor.

(B) an elastic supply of labor.

(C) an inelastic demand for the finished product.

(D) a perfectly competitive labor market.

(E) a perfectly competitive product market.

88. Consider a closed, classical economy. An increase in the propensity to save across that economy should be expected to cause:

(A) real GNP and prices to climb.

(B) prices to climb while real GNP remains the same.

(C) prices to fall while real GNP remains the same.

(D) real GNP and prices to fall.

(E) real GNP to fall while prices rise.

89. Consider a utility maximizing family which earns $600 per month and which would always spend one-third of its income up to $1000 per month on food. The government is contemplating three food supplement programs; they would apply to the family in question according to the following formula:

Program A: A monetary grant of $150 per month.

Program B: A monthly grant of $150 worth of food stamps redeemable only for food.

Program C: A provision allowing the monthly purchase of up to $100 in food stamps that can be purchased at the price of 40 cents for each $1 worth of food stamps. The food stamps are redeemable only for food.

Which of the following alternatives correctly records the utility rankings of this family across the three alternative programs?

(A) The family is indifferent across the three alternatives.

(B) The family ranks Program A higher than either B or C, but is indifferent between B and C.

(C) The family ranks Program A higher than Program B which is, in turn, ranked higher than Program C.

(D) The family ranks Program B higher than either program A or C, but is indifferent between A and C.

(E) The family ranks Program B higher than Program A which is, in turn, ranked higher than Program C.

90. The institution of free trade will mean that country A will be an exporting country, and country B will be an importing country. There are welfare gains to be made in both countries. Which of the following statements accurately identifies the groups within A and B who would tend to favor or oppose free trade of X?

(A) Consumers in both A and B favor free trade; producers in A favor free trade, but producers in B would oppose it.

(B) Consumers in both A and B favor free trade; producers in B favor free trade, but producers in A would oppose it.

(C) Producers in both A and B favor free trade; consumers in A favor free trade, but consumers in B would oppose it.

(D) Producers in A and consumers in B favor free trade; producers in B and consumers in A would oppose it.

(E) Producers in B and consumers in A favor free trade; producers in A and consumers in B would oppose it.

91. Four of the five events described below might reasonably be expected to shift the demand curve for beef to a new position.

One would not shift that demand curve. The single exception is:

(A) a rise in the price of some good which consumers regard as a substitute for beef.

(B) a fall in the price of beef.

(C) an increase in the money incomes of beef consumers.

(D) a widespread advertising campaign undertaken by the producers of a product competitive with beef (e.g., pork).

(E) a change in people's tastes with respect to beef.

92. Let a wage settlement be defined by a formula that sets the rate of annual increase equal to 4% plus 50% of the observed rate of price inflation. An employer would prefer to set the base rate equal to 2% and the indexing factor equal to 70% in which of the following circumstances?

(A) Expected inflation equal to 5%.

(B) Expected inflation greater than 10%.

(C) Expected inflation less than 7%.

(D) Expected inflation less than 10%.

(E) Expected inflation equal to 4%.

93. The property taxes a firm must pay on its plant are increased; i.e. its fixed cost is increased. On a graph illustrating this firm's cost curves, the marginal cost curve would

(A) move to the right.

(B) move to the left.

(C) move upward.

(D) move downward.

(E) not move at all.

94. Trade theory predicts that protectionist measures produce

(A) permanent increases in the rate of inflation.

(B) temporary increases in the rate of inflation.

(C) permanent reductions in the rate of inflation.

(D) temporary reductions in the rate of inflation.

(E) temporary or permanent increases in the rate of inflation depending upon (1) whether they are quotas or tariffs and (2) the degree of market power held by domestic suppliers in the import competing industry.

95. Suppose you were given a piece of real capital that returned \$1000 every year in perpetuity. Ignoring any capital gains or losses and given an interest rate of 10%, the rate of true economic depreciation that you would incur over the first year of your ownership would be

(A) \$1000
(B) \$100
(C) \$10,000.
(D) 10%
(E) 0.

96. If the return to a productive input is classed as one of economic rent, this means that the supply curve of that input which confronts any one of its demanders must be:

(A) perfectly inelastic.
(B) perfectly elastic.
(C) nonexistent.
(D) highly inelastic.
(E) elastic to a degree determined by the elasticity of other demanders.

97. Suppose that GNP = \$1880 in 1987 with unemployment 2 points above the natural rate. It is known that for each 3% increase in GNP, the unemployment rate would fall by 1% (Okun's Law). If potential GNP were increasing at an annual rate of 2%, then, according to Okun's Law, actual GNP would have to increase by what annual rate to bring unemployment to within 1 point of the natural rate by 1988?

(A) 0%.
(B) 2%.
(C) 3%.
(D) 6%.
(E) 9%.

98. In a decentralized capitalist society, the use of a money pricing system is not expected to help settle the economic problem of

(A) distributing money incomes among the members of the society.

(B) helping a consumer with given tastes and a limited income to decide how best to spend that income.

(C) deciding how much of the available resource supply is to be occupied in making any given consumer good.

(D) choosing the particular kinds of inputs (factors of production) that should be used for the manufacture of any given consumer good.

(E) determining the particular output of goods and services which the society really needs, regardless of the tastes of any or all individual consumers therein.

99. A company's total assets were \$600,000 at the end of 1980; its total liabilities were \$400,000. At the end of 1981, its total assets were \$550,000, and its total liabilities, \$200,000. During 1981, it (i) paid a dividend of \$50,000, and (ii) sold additional shares of its own stock for \$100,000. With these figures, its net profit after taxes for 1981 must have been:

(A) zero.

(B) \$50,000.

(C) \$100,000.

(D) \$150,000.

(E) \$200,000.

100. Consider an economy represented by the following linkage between last year's rate of inflation, given by $\pi(-1)$, and this year's rate given by π.

$$= .9\ [(Y(-1) - Y^*)/Y^*] + (-1) + .5\,Z$$

In this equation, Y^* represents potential GNP, $Y(-1)$ represents actual GNP last year, and Z represents the potential fór a random shock effect on prices. Meanwhile let the acceptable tradeoff between inflation and a GNP gap, i.e. the policy response relationship, be summarized by

$$[(Y-Y^*) / Y^*] = -.9\pi$$

where Y is current GNP. Starting at equilibrium with GNP equaling potential GNP, prices indexed to unity and inflation stuck at 0, what would be the level of prices two years after a 20% price shock ($Z = .2$)?

(A) 1.00.

(B) 1.10.

(C) 1.12

(D) 1.22.

(E) 1.44

101. If a productive input has just one single employment (i.e. there is only one commodity it can help to produce), then the price paid to it

(A) will tend to fall below the normal competitive level, because of the absence of competitive bidding.

(B) will be a cost to each of its separate users, but not a cost to the whole community or society.

(C) should not be counted as a cost by each of its separate users, although it will still be a cost to the whole community or society.

(D) will be a cost both to its separate users and to the whole community or society.

(E) will not be a cost either to its separate users or to the whole community.

102. Real wages have, in the recent past, been

(A) positively correlated with the changes in the international price of crude oil.

(B) negatively correlated with changes in the international price of crude oil.

(C) independent of changes in the international price of crude oil.

(D) indeterminately correlated with changes in the international price of crude oil – rising during the 1973-74 episode and falling during the 1978-79 price spike.

(E) indeterminately correlated with changes in the international price of crude oil – falling during the 1973-74 price spike and rising during the 1978-79 episode.

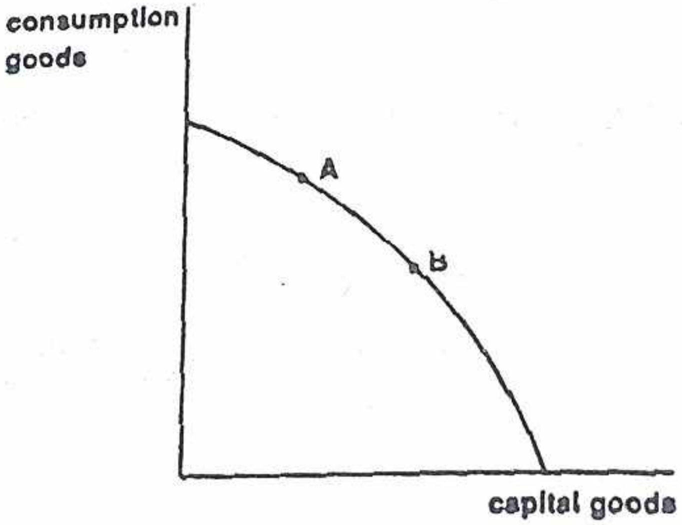


Figure 3

103. In Figure 3 , operation at a point such as A indicates production of some capital goods. Assuming that this is more than sufficient to replace capital goods currently wearing out, then continued operation at A should result in

(A) an inward movement of the whole curve.

(B) no change in the curve, but a move from A to B.

(C) no change necessarily, either in the position of the curve or the operation of the economy at A.

(D) no change in the curve, but a move from A to a point inside the curve.

(E) an outward movement of the whole curve.

104. If, on a company's income statement, its manufacturing cost of goods produced during the current period is less than its manufacturing cost of goods sold, its

(A) beginning inventory for that period must be higher than its closing inventory.

(B) profit for that period must be lower than its profit for the immediately preceding period.

(C) profit for that period must be higher than its profit for the immediately preceding period.

(D) dividends paid for that period must exceed its addition to retained earnings.

(E) beginning inventory for that period must be lower than its closing inventory.

105. Under the Bretton Woods Agreement to maintain fairly fixed rates of exchange, appreciation of a country's currency against the dollar necessitated

(A) a contractionary shift in that country's monetary policy by buying dollar securities.

(B) an expansionary shift in that country's fiscal policy by increasing its government's share of domestic spending.

(C) an expansionary shift in that country's monetary policy by buying its own currency denominated securities.

(D) a contractionary shift in that country's fiscal policy by reducing its government's share of domestic spending.

(E) a contractionary shift in that country's monetary policy by selling dollar securities.

106. If land is fixed in total supply but has many alternative uses (one of which is tobacco production), then normally a 50 percent tax on the rental price of any land used for tobacco production will result in

(A) a 50 percent increase in the rent which tobacco producers must pay.

(B) a 50 percent decrease in the rent paid by users of such land.

(C) a 50 percent decrease in the rent received (net) by owners of such land.

(D) no change in amount of rent paid or received.

(E) pressure on all rents to increase.

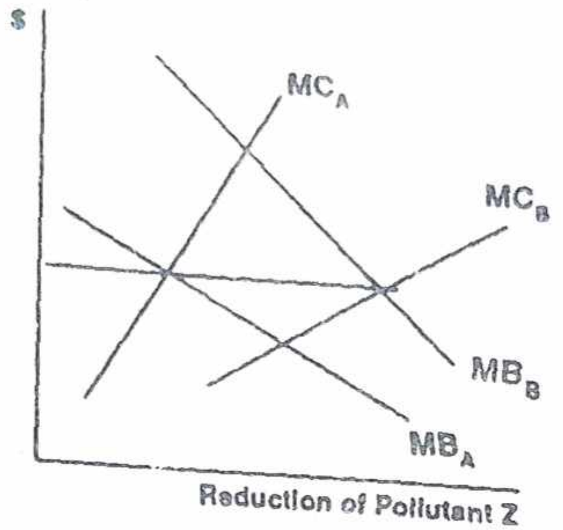


Figure 4

107. Suppose that there are two communities (A and B) for which the emissions of some pollutant are to be regulated by some federal regulatory body. Figure 4 above shows the marginal benefits and costs for each; they are identified MB and MC with appropriate subscripts A or B. Which of the following statements is true?

(A) The regulatory body should be indifferent on welfare grounds between selecting a uniform fine for both communities or a uniform (quantity) standard.

(B) The regulatory body should surely favor a uniform (quantity) standard over a uniform fine on welfare grounds.

(C) The regulatory body should surely favor a uniform fine over a uniform (quantity) standard on welfare grounds.

(D) The regulatory body should recognize that it will have to set different values for each community regardless of the type of control that it selects, but it should favor (quantity) standards on welfare grounds.

(E) The regulatory body should recognize that it will have to set different values for each community regardless of the type of control that it selects, but it should favor fines.

108. Let imports increase by $1 billion. If tax receipts are stable and private saving is fixed, which of the following adjustments is consistent with maintaining equilibrium?

(A) Holdings of bonds and money both increase by $1 billion each.

(B) Holdings of bonds increase by $1 billion while holdings of money fall by an equal amount.

(C) Holdings of bonds increase by $1 billion while money holdings do not change.

(D) Holdings of money fall by $1 billion while bond holdings do not change.

(E) Holdings of bonds and money both fall by $1 billion each.

109. An economy can produce 200 units of good X and 300 units of good Y--i.e. this is one point on its production-possibility frontier. Another point on this frontier is 240 units of X and 290 units of Y. The "law of increasing (relative) costs" would be illustrated by the following third point on the frontier:

(A) 280 of X, 270 of Y.

(B) 160 of X, 310 of Y.

(C) 280 of X, 280 of Y.

(D) 160 of X, 315 of Y.

(E) 280 of X, 285 of Y.

110. If a central bank were to set monetary policy to maintain a constant exchange rate, then

(A) the LM curve would be vertical at potential GNP.

(B) the LM curve would be vertical at whatever level of GNP was supported by existing resource utilization.

(C) the LM curve would be horizontal at an interest rate higher/lower than the world rate, depending upon whether the current account were in deficit/surplus

(D) the LM curve would be horizontal at the world interest rate.

(E) the LM curve would have some slope to it, but it would be steeper than if monetary policy were set independent of exchange rate considerations.

111. Suppose that an individual faces a 25% personal income tax rate and that capital gains are taxed at 50%. A financial asset (call it A), originally purchased for $100 and paying an annual return of $10 per year, has risen in price to $150. It still pays $10 per year so its return has fallen to 6.67%. What is the smallest percentage return that a second asset, B, must pay to make it a viable alternative for a "sell A and buy B" transaction?

(A) 5%.

(B) 6.67%.

(C) 8%.

(D) 10%.

(E) 15%.

112. Let the change in net exports be negative 200 billion. Which of the following adjustments would maintain stable macroeconomic equilibrium?

(A) Private saving increases by $100 billion and the federal deficit increases by $100 billion.

(B) Private saving increases by $100 billion and the federal deficit falls by $100 billion.

(C) Private saving falls by $100 billion and the federal deficit increases by $100 billion.

(D) Private saving falls by $100 billion and the federal deficit falls by $100 billion.

(E) The federal deficit decreases by $200 billion with no change in private saving.

113. A firm employs such quantities of inputs A and B that the marginal product of A is 60 units, and that of B is 40 units. Prices of A and B are \$4 and \$2, respectively. Assuming A and B to be the only inputs involved, this firm is

(A) producing its present output at minimum cost, but definitely is not earning maximum possible profit.

(B) not producing its present output at minimum cost, and is not earning maximum possible profit.

(C) producing its present output at minimum cost, and is not earning maximum possible profit.

(D) not producing its present output at minimum cost, but nevertheless is earning maximum possible profit.

(E) not producing its present output at minimum cost, but nonetheless might be earning maximum profit depending upon market conditions.

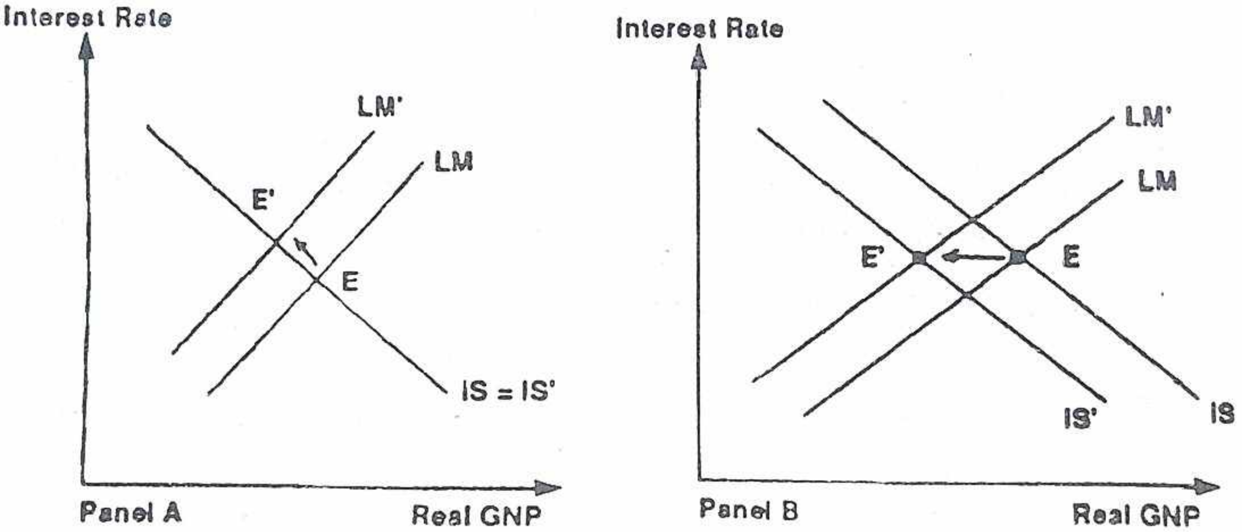

Interest Rate
LM'
LM
E'
E
IS = IS'
Panel A
Real GNP
Interest Rate
LM'
LM
E'
E
IS'
IS
Panel B
Real GNP

Figure 5

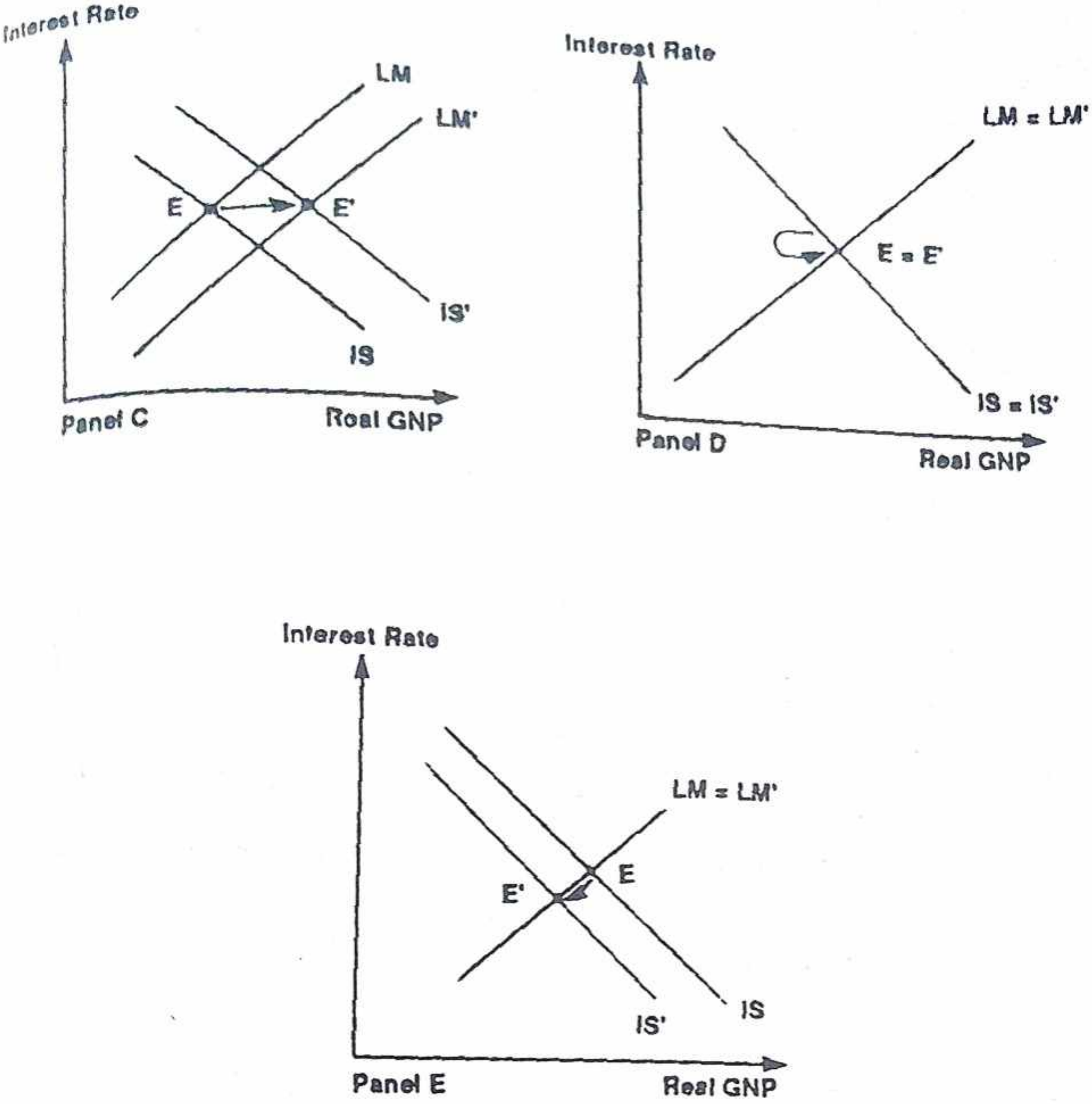

Interest Rate
LM
LM'
E
E'
IS'
IS
Panel C
Real GNP
Interest Rate
LM = LM'
E = E'
IS = IS'
Panel D
Real GNP
Interest Rate
LM = LM'
E
E'
IS'
IS
Panel E
Real GNP

Figure 5

114. Consider a small, classical, open economy operating in a regime of fixed exchange rates. Which panel in (Figure 5) shows how this economy would move from an initial equilibrium, E, to a new equilibrium, E', in response to a reduction in world prices? In all cases, IS' and LM' represent IS and LM schedules after the price reduction.

(A) Panel A.

(B) Panel B.

(C) Panel C.

(D) Panel D.

(E) Panel E.

115. If all inputs in a productive process are increased in amount by 100 percent, and the result is an increase in output of 120 percent, this would

(A) illustrate the law of diminishing returns.

(B) contradict the law of diminishing returns.

(C) illustrate increasing returns to scale.

(D) contradict the principle of increasing returns to scale.

(E) contradict the law of scarcity.

116. People who invest in any new capital good always face some degree of uncertainty about the future returns that that good might generate. If investors are the least bit risk averse, the effect of this uncertainty factor is

(A) fully recognized in the classical model of capital in which the demand for capital is reflected by its marginal revenue product.

(B) to set an effective maximum level for the market interest rate.

(C) to make the task of establishing "easy" monetary policy a little easier.

(D) to make the task of establishing "tight" monetary policy a little harder.

(E) to set a positive minimum level for the nominal rate of interest.

117. Given a classical economy and fixed exchange rates, a central bank must set domestic monetary policy to

(A) maintain interest rates slightly above the world rate to create a reserve buffer.

(B) maintain interest rates slightly below the world rate to reduce the opportunity cost of creating a reserve buffer.

(C) keep the domestic price level equal to world prices expressed in terms of domestic currency through the exchange rate.

(D) keep net exports equal to zero by manipulating the price level to move against the exchange rate.

(E) keep the economy operating at full potential in the face of potentially large shifts in aggregate demand derived from random shocks to net exports.

118. Which one of the following is not a correct statement of the general relationship between the total product of an input or factor and the marginal product of that factor?

(A) Total product at any input level equals the sum of all of the marginal products up to that level.

(B) Marginal product at any output level multiplied by the employment level required to produce that output quantity equals total product.

(C) Graphically, the slope of the total product curve at any output level equals marginal product at that level.

(D) Graphically, the area under the marginal product curve for any quantity of the input equals the total product associated with that input quantity.

(E) Marginal product is defined as the increment in total product resulting from a 1-unit increase in the factor (other factor quantities being held constant).

119. When economists speak of investment, they are speaking of

(A) the part of GNP used by households for current use.

(B) the part of GNP, past and present, that has been set aside to add to productive capacity.

(C) the part of GNP captured in the computation of the dollar value of goods but not services.

(D) the part of GNP that the government devotes to the construction of roads, airports, and the like.

(E) the part of current GNP used by business to add to productive capacity, and by households to add to their stock of new houses.

120. An individual who holds marketable government securities paying positive real returns is likely to sell those securities and hold money instead if he believes that

(A) interest rates will fall far below present levels in the near future.

(B) interest rates will fall below present levels in the near future, but then rebound to higher levels.

(C) interest rates will rise far above present levels in the near future.

(D) interest rates will remain constant over the foreseeable future.

(E) a round of substantial unemployment is likely to occur in the near future.

121. Nations are sometimes accused of exporting recession to a trading partner. Which of the following policies of country A might have the effect of increasing the rate of unemployment in country B?

(A) An appreciation of A's currency relative to B's.

(B) An increase in the loans offered to country B.

(C) A depreciation of A's currency relative to B's.

(D) A reduction in the tariffs levied on imports from B.

(E) An increase in the prices of goods that A exports to B.

122. When a firm has satisfied the least-cost rule for input employment, then it

(A) cannot be at its maximum-profit position.

(B) may or may not be at its maximum-profit position, but must be operating at the particular output level which yields lowest-attainable average cost.

(C) must be at its maximum-profit position.

(D) may or may not be at its maximum-profit position, but will have equated the marginal product of each input with marginal revenue.

(E) may or may not be at its maximum-profit position, but will have determined marginal cost for its chosen output.

123. Suppose that you observe an increase in both output and prices. If you hold to a theory of flexible prices that maintains full employment, you can explain your observation

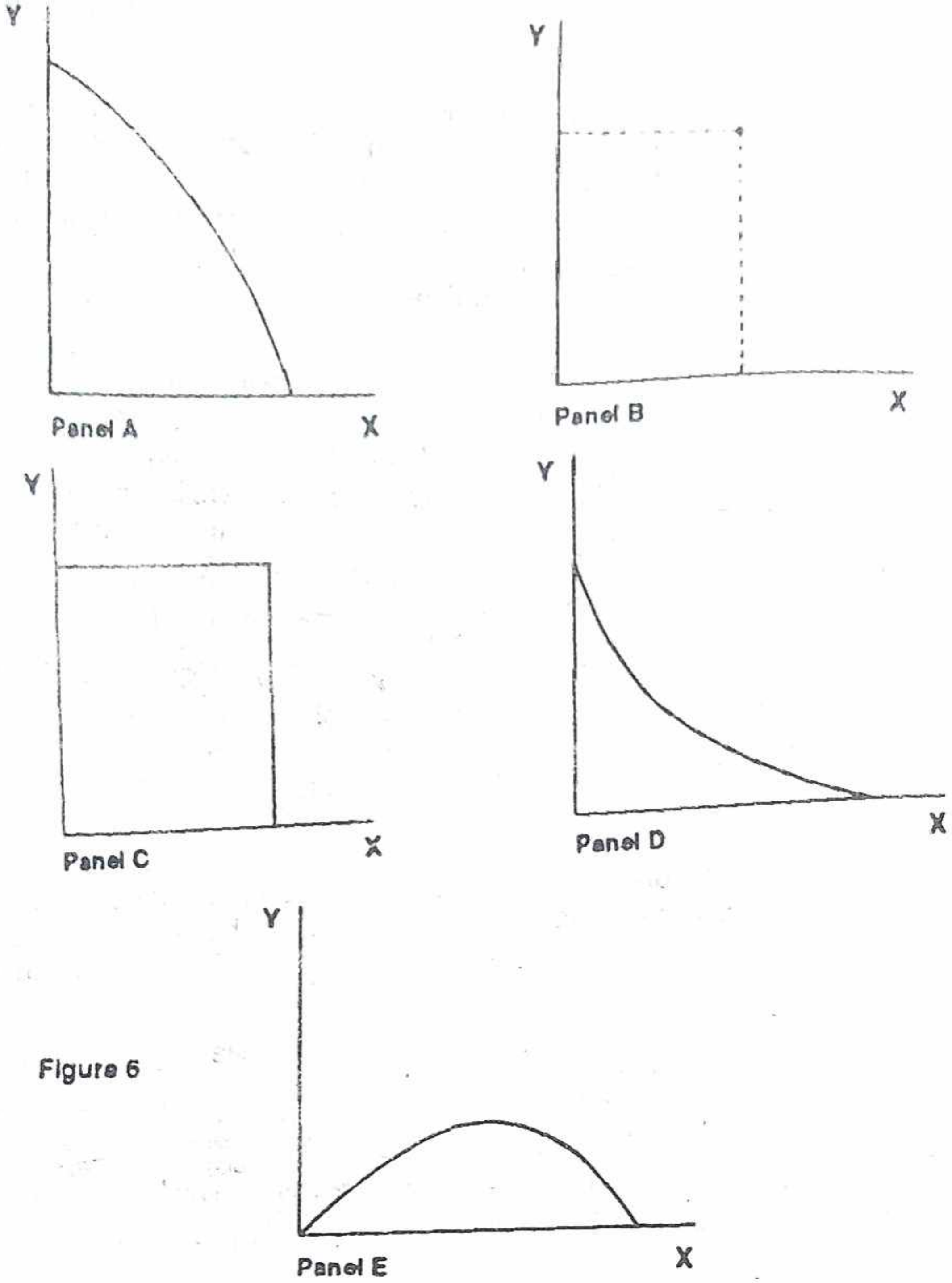
(A) entirely in terms of a downward shift in aggregate demand.

(B) entirely in terms of an upward shift in aggregate demand.

(C) entirely in terms of a reduction in potential real GNP.

(D) entirely in terms of an increase in potential real GNP.

(E) only in terms of changes in both aggregate demand and potential real GNP.



Panel A

Panel B

Panel C

Panel D

Panel E

Figure 6

Use Figure 6 above to answer the following two questions.

124. An economy produces only two goods. All of the inputs are entirely specialized for the production of one good or the other; i.e. the X inputs would be useless in the production of Y and the Y inputs would be useless in the production of X. Which alternative in Figure 6 above most accurately reflects the production frontier for this circumstance?

(A) Panel A

(B) Panel B

(C) Panel C

(D) Panel D

(E) Panel E

125. An economy produces only two goods. X is required in the production of Y, but is also a consumption good in its own right. Which alternative in Figure 6 above most accurately reflects the production frontier for this circumstance?

(A) Panel A
(B) Panel B
(C) Panel C
(D) Panel D
(E) Panel E

126. Consider a monopoly. The price of one of its inputs, A, is $10, and the marginal product of A is 5 units of finished product X. The price of X is $2. The firm has satisfied the least-cost rule for input employment. This firm

(A) cannot be at its maximum-profit position, and to reach that position should decrease its output.

(B) cannot be at its maximum-profit position, and to reach that position should increase its output.

(C) is at its profit-maximizing position.

(D) is at its maximum-profit position but should employ less of input A and more of other inputs.

(E) is at its maximum-profit position but should employ more of input A and less of other inputs.

127. Let aggregate demand (AD), in an economy with a potential GNP of 5500, be represented initially by AD=4000+[2000/P] where P is price level. Suppose that over the course of one year, potential GNP rose to 6000 and aggregate demand shifted to AD=4500+[2000/P]. You should expect to have witnessed, over the course of that year,

(A) no price inflation.

(B) price inflation of 12.8%.

(C) price disinflation of 12.8%.

(D) price inflation of 9.1%

(E) price disinflation of 9.1%.

128. In which of the following circumstances would an excise tax be shifted entirely onto consumers?

(A) Demand is relatively more price elastic than supply.

(B) Supply displays unitary price elasticity.

(C) Demand displays unitary price elasticity.

(D) Supply is perfectly inelastic.

(E) Demand is perfectly inelastic.

129. A, B, and C are inputs employed to produce good X. If the quantity of A used were increased, we would ordinarily expect A's marginal product to

(A) increase, in all circumstances.

(B) increase if the quantities of B and C are left unchanged, but not necessarily to increase if B and C quantities are increased in the same proportion.

(C) decrease, in all circumstances.

(D) decrease if the quantities of B and C are left unchanged, but not necessarily to decrease if B and C quantities are increased in the same proportion.

(E) decrease if B and C quantities are increased in the same proportion, increase if B and C quantities are left unchanged.

130. The position and shape of any indifference curve for any particular consumer are governed:

(A) by his or her tastes and by the amount of the income or budget.

(B) solely by the prices of the goods bought.

(C) by tastes, by the amount of income, and by the prices of the goods bought.

(D) by the prices of the goods bought and by the amount of income, not by tastes.

(E) solely by his or her tastes.

131. Let the aggregate demand (AD) schedule be AD = 4000 + [2000/P] and potential GNP equal 5500. If the price level (P) were 1.70, you would expect to see

(A) downward pressure exerted on prices because aggregate demand exceeded potential GNP.

(B) downward pressure exerted on prices because aggregate demand fell short of potential GNP.

(C) upward pressure exerted on prices because aggregate demand exceeded potential GNP.

(D) downward pressure exerted on prices because aggregate demand fell short of potential GNP.

(E) no pressure on prices because aggregate demand exactly matched potential GNP.

132. If the law of diminishing returns is to apply, the following condition must be satisfied: the increase in output

(A) must come from a proportionate increase in all inputs.

(B) comes from an increase in some inputs, but at least one

(C) must come from an increase in one input only, all others remaining fixed in quantity.

(D) must grow less because of a decline in the competence or skills of inputs later applied.

(E) may be proportionate in physical quantity to the increase in inputs, but the value of the extra output must decline.

133. When a firm has employed all its inputs in such quantities that the ratio of input price to input marginal product is the same for all inputs, and that the firm can purchase any amount of inputs they desire at the going market price for the input, this means that the firm

(A) is operating in such a way that it has made the marginal revenue product of each input equal to its price.

(B) is operating at maximum-profit output and is producing that output at minimum cost.

(C) is operating at maximum-profit output, but may or may not be producing that output at minimum cost.

(D) may or may not be operating at maximum-profit output, but is satisfying a necessary condition for producing its present output at minimum cost.

(E) may or may not be at maximum-profit output and may or may not be producing its present output at minimum cost.

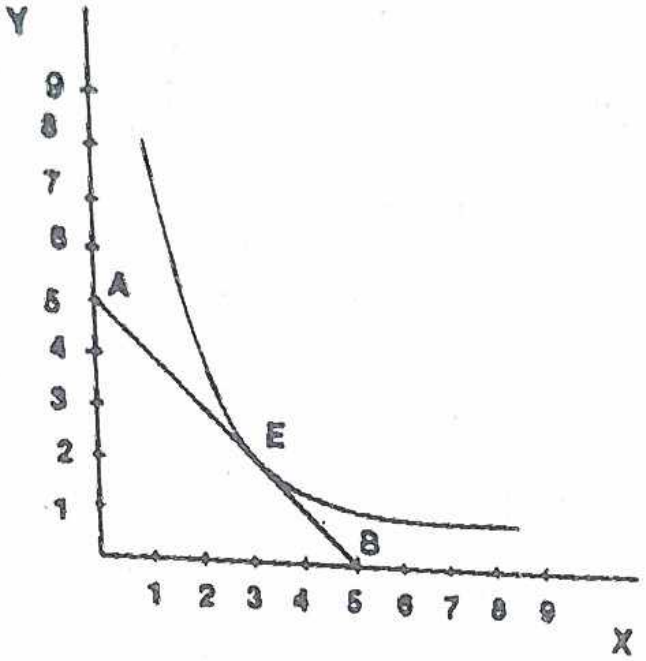


Figure 7

134. Refer to Figure 7 above. In that graph, line AB is a consumer's budget constraint and E is his or her equilibrium. The price of good X is $4. The price of good Y must be

(A) $1.

(B) $2.

(C) $3.

(D) $4.

(E) $5.

135. The federal tax system now allows individuals to write off some of their investment losses against their taxable income. The corporate income tax allows a similar deduction for financial setbacks. If those provisions were to lapse, you should expect

(A) risk-taking in the U.S. to rise if people display increasing or constant relative risk-aversion with respect to income, and fall if they display decreasing relative risk-aversion with respect to income.

(B) risk-taking in the U.S to fall if people display increasing or constant relative risk-aversion with respect to income, and rise if they display decreasing relative risk-aversion with respect to income.

(C) risk-taking in the U.S. to fall if people display increasing or constant relative risk-aversion with respect to income, but you could not offer a prediction if they display decreasing relative risk-aversion with respect to income.

(D) risk-taking in the U.S. to fall if people display decreasing or constant relative risk-aversion with respect to income, and rise if they display increasing relative risk-aversion with respect to income.

(E) risk-taking in the U.S. to fall if people display decreasing or constant relative risk-aversion with respect to income, but you could not offer a prediction if they display increasing relative risk-aversion with respect to income.

GRE ECONOMICS
TEST I

ANSWER KEY

1.	A
2.	D
3.	D
4.	B
5.	D
6.	B
7.	B
8.	D
9.	C
10.	C
11.	B
12.	B
13.	B
14.	B
15.	C
16.	E
17.	C
18.	C
19.	E
20.	C
21.	A
22.	A
23.	D
24.	E
25.	E
26.	D
27.	C
28.	A
29.	C
30.	B
31.	C
32.	A
33.	D
34.	A
35.	A
36.	A
37.	B
38.	C
39.	A
40.	B
41.	A
42.	E
43.	C
44.	B
45.	A
46.	A
47.	B
48.	C
49.	B
50.	A
51.	A
52.	D
53.	C
54.	C
55.	B
56.	D
57.	A
58.	C
59.	B
60.	E
61.	C
62.	B
63.	A
64.	E
65.	B
66.	D
67.	D
68.	A
69.	D
70.	C
71.	B
72.	D
73.	E
74.	C
75.	B
76.	B
77.	C
78.	E
79.	B
80.	B
81.	B
82.	B
83.	B
84.	A
85.	D
86.	C
87.	C
88.	C
89.	A
90.	D
91.	B
92.	D
93.	E
94.	B
95.	E
96.	E
97.	E
98.	A
99.	C
100.	C
101.	B
102.	B
103.	E
104.	A
105.	C
106.	A
107.	C
108.	C
109.	A
110.	D
111.	C
112.	C
113.	B
114.	D
115.	C
116.	E
117.	C
118.	B
119.	E
120.	C
121.	C
122.	E
123.	E
124.	B
125.	E
126.	A
127.	A
128.	E
129.	D
130.	E
131.	B
132.	C
133.	D
134.	D
135.	E

GRE ECONOMICS TEST

DETAILED EXPLANATIONS OF ANSWERS

1. (A)

If prices increase, the LM curve shifts in and produces a higher rate of interest and a lower level of output. If the FED accommodates, it responds by increasing the money supply so that the LM curves shift in by a smaller amount. If that is the case, then there is a smaller increase in the rate of interest and a correspondingly smaller reduction in the level of output. Drawing an aggregate demand picture of this observation, a given increase in prices is accompanied by a smaller reduction in output, and produces a steeper aggregate demand curve.

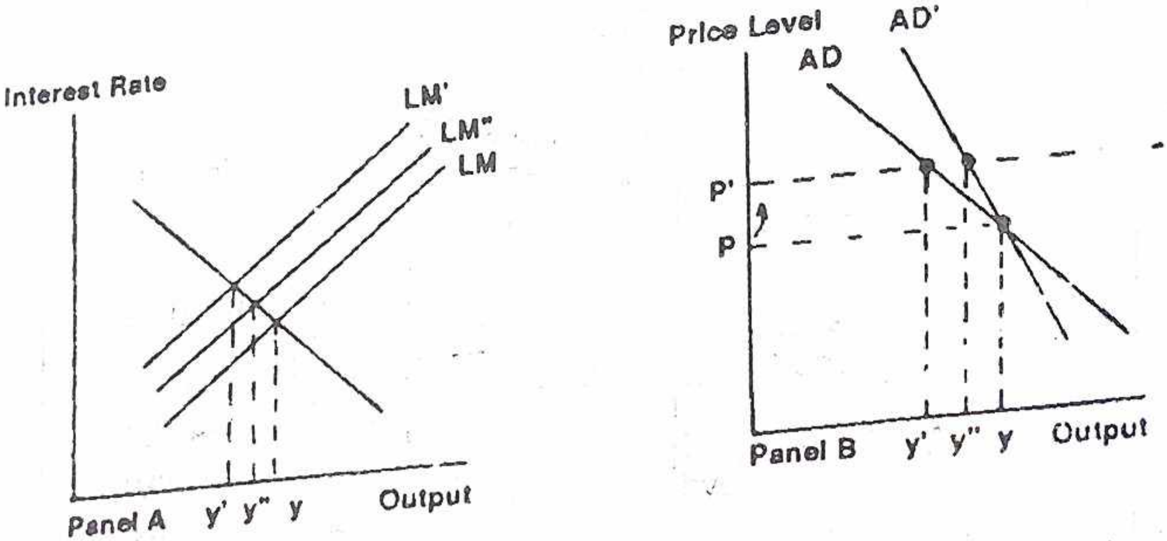


Figure A1

To see this geometrically, consult Figure A1. In Panel A, a price increase from P to P' without accommodation, shifts the LM curve from LM to LM'. The result is a reduction in output to Y' that is captured by aggregate demand schedule AD in Panel B. With accommodation, though, the LM curve shifts only to LM" in Panel A and GNP falls to Y" (>Y'). Connecting (Y,P) with (Y",P') instead of (Y',P') produces the steeper AD' in Panel B.

2. (D)

"Elastic" does not describe the direction of the change in quantity that should be expected as the price increases; except for Giffen goods, that direction is always negative regardless of the price elasticity of demand. It is, instead, a measure of the ratio of percentage changes. If demand is elastic, then the percentage change in quantity is greater than the percentage change in price; i.e. an x% increase in the price would cause a reduction in the quantity demanded of more than x%. That being the case, an increase in the price would cause total expenditure on the good in question to fall. Only answer (D) takes this into account.

3. (D)

Since the opportunity cost of providing more labor (and thus producing more output) is less than the price that can be received for that output, you should expect that each owner will increase his or her effort and thereby produce more output. This should cause industry output to climb, so the price must move down along the demand curve. At the same time, the opportunity cost of producing each unit of output should climb because of diminishing marginal productivity of labor and increasing marginal utility of leisure. Long run equilibrium can therefore be achieved at a lower price and a higher output.

4. (B)

Contractionary fiscal policy can be modeled by shifting the IS curve in. Both GNP and the interest rate therefore fall, causing the currency to depreciate (demand for the currency falling because the return on assets requiring that currency has fallen). The trade deficit should fall, as a result, because exports have become less expensive and imports have become more expensive.

Contractionary monetary policy works in just the opposite way. Shifting the LM curve in produces lower GNP and higher interest rates. The currency should appreciate, therefore, making exports more expensive and imports cheaper. The result should be a worsening in the trade deficit. Answer (B) is thus the only correct statement.

5. (D)

Taking land as an input, rent should be charged on either field equal to its potential marginal revenue product. Since both fields grow grain, any difference in rent will be derived from a difference in marginal revenue product (marginal revenue product is equal to the marginal revenue derived from the sale of the grain times the marginal product of the land). Since plot A is more productive than plot B, a higher rent should be charged for plot A.

6. (B)

The yield on stock is generally real; dividends tend to increase, e.g., with prices and thus with inflation. Bonds, however, pay only a nominal return. The difference between the two is thus the marketplace manifestation of peoples' expectations about the difference between the appropriate nominal return and the corresponding real return; i.e., it is an approximation of their expected rate of price inflation. The difference between the numbers provided in the question is a consistent 2%; expected inflation must have remained close to 2% over the period.

7. (B)

The conditions that define general equilibrium include only one of those listed in the question. In particular, every individual sets every marginal rate of substitution equal to every price ratio. For goods i and j, then, every person maximizes utility where

$$MRS = \frac{MU_i}{MU_j} = \frac{P_i}{P_j}$$

where MU_i represents marginal utility generated by consuming good i, P_i represents the price of good i, etc. Recalling that marginal cost equals price in competitive equilibrium, it is now clear that for every person and every good

$$\frac{MU_i}{MC_i} = \frac{MU_j}{MC_j} = \cdots = \text{some constant of proportionality.}$$

Answer (B) is thus correct. Answer (A) is incorrect because marginal utilities are not set equal to prices; ratios of marginal utilities are set equal to ratios of price (see above). Answers (C) and (D) are wrong because it is the marginal revenue products of all inputs that are set equal to prices of the inputs to maximize profits in any (including competitive) equilibrium. Answer (E) is just nonsense.

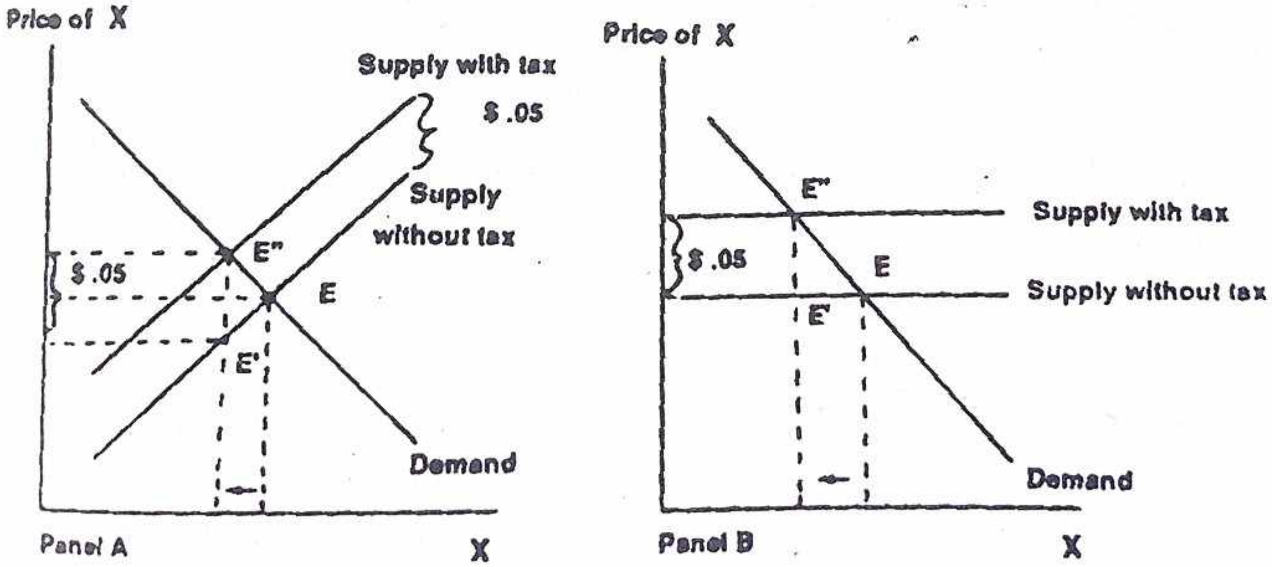


Figure A2

8. (D)

Figure A2 shows the proper graphical analysis of this tax. A 5 cent tax increases the supply price of any quantity of good X (for want of a better name) by 5 cents; thus, the supply curve shifts up by 5 cents. The supply curve in Panel A shows some finite elasticity; new equilibrium occurs at E' and E" – the producer price is smaller at E' than before at the old equilibrium E, because quantity has contracted and the price paid by consumers is higher than before at E," but not by the full 5 cents. Only if the producer price does not fall (i.e., only if supply is perfectly elastic and thus horizontal) will the price increase match the tax. See panel B of Figure A2 for an illustration of this case; notice there that the price associated with E' – the price received by producers after the tax is paid –is identical to the price that they receive at E before the tax was levied.

9. (C)

Since average cost for 200 units is \$4.99, total cost is 200 x \$4.99 = \$998. The average cost of producing 201 units is \$5.00 so total cost for 201 units would be 201 x \$5.00 = \$1005. The marginal cost of the 201st unit must therefore equal

$$[\$1005 - \$998] / [1] = \$7.00$$

Clearly, therefore, the firm is producing where price equals marginal cost, and profits are already maximized.

10. (C)

When the value of the dollar falls, protecting the currency requires that the FED consider doing something that will increase its demand overseas; i.e., it must somehow make some U.S. assets (whose purchase requires foreign nationals to obtain dollars) more attractive abroad. Restricting the money supply so that domestic interest rates climb is just the ticket. The real return to holding bonds denominated in dollars would then climb, making them more valuable to hold and increasing their demand. Since dollars would be required to purchase these bonds, the price of dollars (i.e., the exchange rate) would also climb according to nothing more mysterious than the simple fundamentals of supply and demand analysis.

11. (B)

GNP is effected only by changes in the aggregate production function, so GNP should not change with changes in aggregate demand. Change occurs only if the aggregate supply curve is vertical; i.e. if aggregate supply is perfectly inelastic. Once that is noted, though, there is no need to constrain the representation of aggregate demand. Changes in aggregate demand, regardless of slope, will not change real GNP; only price will adjust.

12. (B)

The costs of production influence the quantity of any good that a producer might want to bring to market. That is the point of deriving supply schedules for competitive firms from marginal cost schedules, and of tracing the marginal cost of an imperfect competitor against marginal revenue. The price can be below the cost of production – not in equilibrium and not forever, but it can happen. The price can be above the cost of production – monopolists project positive economic profit from exploitation of some barrier to entry. Production costs do not, however, cause shifts in demand curves (at least not directly and certainly not without some reaction with distributional consequences). Only answer (B) is accurate.

13. (B)

Profits are maximized for a competitive firm where price equals marginal cost. It is clear, therefore, that the price of this firm's output is \$10. Since total revenue is \$5000, total output must be [\$5000/\$10] = 500 units.

14. (B)

An appreciation in the real exchange rate makes domestic goods more expensive abroad and makes foreign goods less expensive at home. As a result, net exports are expected to fall, aggregate demand falls for any interest rate, and the IS curve must shift in. Only Panel B in Figure 1 shows this adjustment, with new equilibrium showing reductions in both GNP and the interest rate (which should weaken the value of the currency somewhat, and reverse some of the increase that started the whole chain).

15. (C)

The present discounted value formula shows the interest rate in the denominator with higher and higher powers as the expected returns appear further and further into the future. For a return R_t expected t years from the present, the present value of that return given an interest rate r is

$$\frac{R_t}{(1+r)^t}$$

As the interest rate climbs, therefore, this value falls at a rate that accelerates with the size of t. Since these returns are the only positive components of the present value of an asset and since the costs of assets are usually paid early, higher interest rates cause the present values of nearly all assets to fall.

16. (E)

In the short run, aggregate demand carries the weight. Aggregate supply determines long run trends in GNP, which depends upon the capital stock and recent changes in technology. In the short run when prices might be a bit sticky, though, the sum total of demand, including government spending and current investment, is usually thought to determine output.

17. (C)

Marshall's differentiation across "momentary," "short," and "long" time periods was an attempt to differentiate across the size of the quantity (supply) reactions that could be expected in response to changes in the price of some good as the time allowed for that response increased. The momentary response to a higher price should produce no increase in quantity; there just is not time to produce more units than planned. In the short run, some small quantity response might be expected (overtime, speedups, etc.). In the long run, an additional assembly line (or two or three) can be brought on line. Almost anything is possible, and a large response should be expected. In other words, the price elasticity of supply should increase with the period of time. Only answer (C) correctly links this observation with Marshall.

18. (C)

Firms maximize their profits when marginal revenue equals marginal cost; in perfect competition, this occurs when price equals marginal cost. Profits in a competitive firm can be positive, negative, or zero depending upon how the price stacks up against the average cost of producing the profit maximizing output. Since new firms enter the market if the price exceeds average cost at that output and firms make a positive pure economic profit, positive profits with price greater than average cost cannot be sustained in the long run – not because firms want lower prices, but because the very operation of the market makes it impossible. Similarly, existing firms leave the market if the price falls below the profit the profit maximizing average cost, and a price that is smaller than average cost cannot be sustainedeither. Price must, therefore, equal average cost in the long run. To maximize profits, though, price must also equal marginal cost. The only place that marginal cost equals average cost is the minimum of the average cost curve, and that is the long run equilibrium – not because firms decide it, but because the very operation of the market makes it the only stable equilibrium. Only answer (C) captures this inevitability correctly.

[illegible]

The U.S. ran up enormous foreign trade deficits in its current accounts throughout most of the 1980's. Imports far exceeded exports, and were an important component of aggregate demand. If net exports had been made to balance by contractionary fiscal policy, the U.S. would have suffered through a large demand deficiency recession (added on top of the 1982 recession). As in (E), the U.S. economy would have been operating far below full employment.

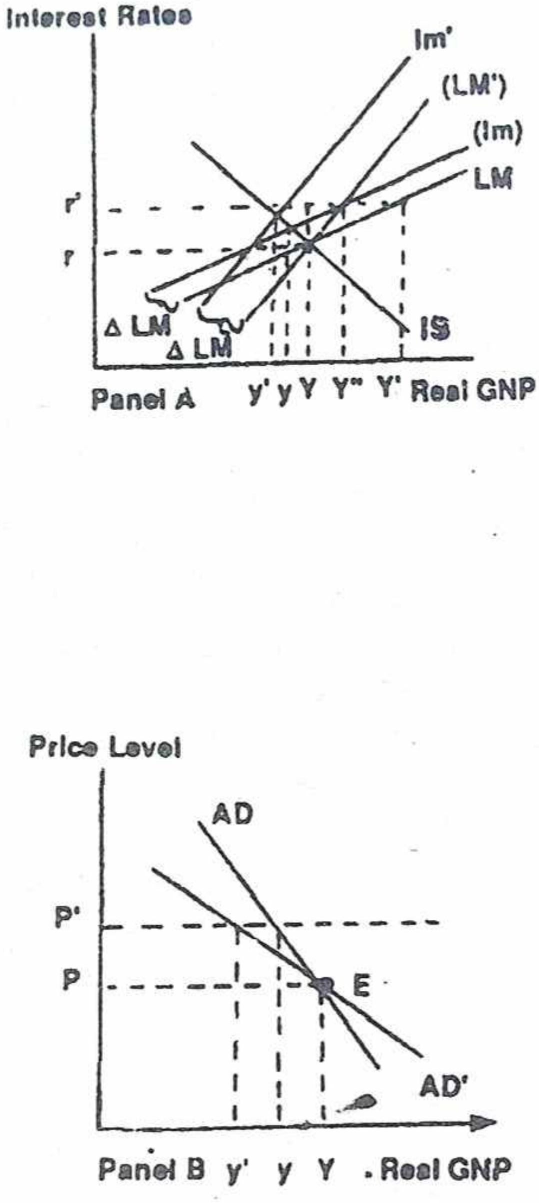


Figure A3

20. (C)

A diminished sensitivity in the demand for money to changes in the interest rate means that, for any given change in the interest rate, there needs to be a smaller adjustment in transactions demand to keep demand equal to a fixed supply. Transactions demand depends upon real GNP, so is needed to a smaller adjustment in real GNP to accommodate any change in the interest rate. In other words, the LM curve becomes more vertical. To see this geometrically, consult Panel A of Figure A3. There, an initial LM curve is given by LM. An increase in the interest rate from r to r' requires an increase in real GNP from Y to Y' to maintain money demand at a prescribed level of money supply; transactions demand must increase in response to the higher real GNP to cover the reduction in assets demand caused by the higher interest rate. If money demand becomes less sensitive to the change in the interest rate, this required increase in real GNP shrinks and can be represented by a move from Y to Y" [<Y'].Connecting (Y,r) with (Y",r') to form the new LM', it is clear that the LM curve has become more vertical (i.e., that LM' is steeper). To trace the effect of all of this adjustment on the aggregate demand curve, consult both panels of Figure A3. Starting at equilibrium at E with (Y,P) in Panel B, an increase in the price level shifts the LM curve in. Given the flatter LM curve, Panel A shows a shift from LM to (lm) and real GNP falls from Y to y. Schedule AD captures that move in Panel B. Given the steeper LM', though, an equivalent shift from LM' to (lm') causes real GNP to fall from Y to y' and supports the flatter AD' in Panel B by connecting (Y,P) with (y',P) instead of (y,P).

21. (A)

The net productivity of any capital good is, by definition, its internal rate of return – the discount rate at which the present value of the stream of returns that it would generate equals the present value of its costs. It is used sometimes as an investment criterion. If net productivity exceeds the (expected) market rate of interest (< ; =), then the project will be profitable and it should be considered. Only in a marginal case, do net productivity and the market rate of interest match. None of the other anwers even come close.

22. (A)

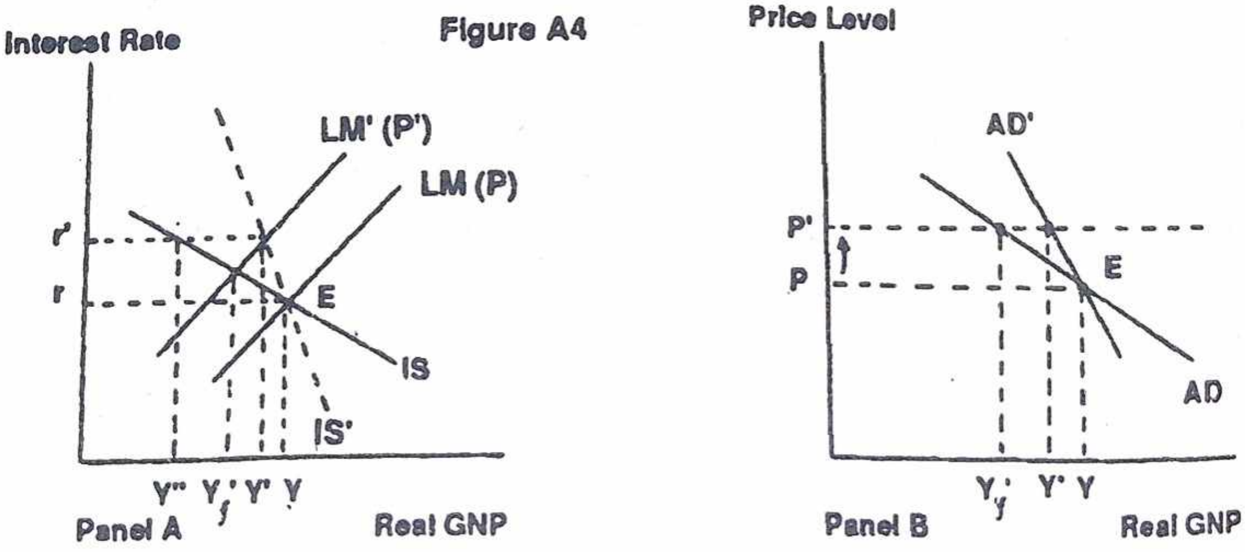
The new classical theory requires both flexible prices and rational expectations. flexible prices work to guarantee that aggregate supply is always set equal to potential GNP. Changes in aggregate demand, therefore, cause no change in actual GNP. Rational expectations undermine the ability of policy adjustments to change aggregate demand because people react to changes in a way that nullify its effect. Changes in policy, therefore, leave real wage and output unchanged.

23. (D)

A diminished sensitivity of net exports to changes in the interest rate means that for example, an increase in the interest rate has a smaller positive effect on imports (because of higher currency values and thus lower effective prices paid) and/or a smaller negative effect on exports (through higher effective prices paid abroad). An increase in the interest rate, therefore, causes a smaller reduction in aggregate demand, and a smaller contraction in the level of real GNP that supports equilibrium in the goods market. The IS curve must become steeper. This is seen in Figure A4 where IS' is steeper through an initial equilibrium at E, because an increase in the interest rate from r to r' produces a smaller reduction in real GNP from Y to Y' rather than Y".

To see what effect this change has on the aggregate demand curve, let the price level increase from P to P' (on Panel B) so that the LM curve on Panel A shifts from LM to LM'. Initial equilibrium at E on Panel A is represented by point E on Panel B with real GNP = Y. After the price increase, real GNP falls to Y_f' against the flatter IS curve and only to Y' against the steeper IS'. Noting that $Y_f' < Y'$ on Panel B, it is clear that the steeper IS' produces a steeper aggregate demand curve AD'.

Figure A4



24. (E)

The conditions of the problem indicate that the product of price (P) and quantity (Q) is fixed for the given range of prices. This is a perfect description of unitary elasticity because it stipulates that any x% increase in the price (within the range) will be met by an x% reduction in the quantity demanded. Why? Because only then will the total expenditure on the good (P x Q) not change. Price elasticity, (the ratio of the percentage change in quantity given a percentage change in price), must therefore equal (in magnitude, at least) unity; for example, elasticity equals the absolute value of [(x%) / (-x%)]. Log differentiation produces the same result.

25. (E)

In response to anticipated inflation, people should be expected to increase consumption expenditures to take advantage of low current prices. The result, given full employment, is a reduction in capital expenditure as the production mix moves toward supplying the consumption surge. Additionally, the reduced saving decreases the supply of financial capital, thereby increasing interest rates and contributing to the reduction in investment in physical capital. The rate of economic growth must therefore be reduced.

26. (D)

This question can be answered by doing the arithmetic. Setting the demand equations equal to 10% shows a pretax distribution of 80 units of capital employed in both sectors; note that $.1 = .50 - .005K^*$ implies that $K^* = [-.4/-.005] = 80$. After the tax is imposed, therefore, total employment must equal 160 units and the aftertax returns must be equivalent; i.e., it must be true that

$$(1-.33)\,[.5 - .005KC] = [.5 - .005KNC].$$

The result is KC = 76 units earning 12%, KNC = 84 units earning 8% and the after tax returns are equalized [(1 − .33) x 12% = 8%].

Another approach which is more intuitive: the before tax equilibrium must have equal employment levels in both sectors because the market rate of interest is the same for both sectors and they display the same demand curves. The tax, meanwhile, must inspire substitution out of the corporate sector and into the noncorporate sector so that the after tax equilibrium shows greater employment in the noncorporate sector. If that is true, the return paid to capital in the noncorporate sector must fall. Only answer (D) displays all of these implications, and it can therefore be judged to be the correct answer without doing the arithmetic.

27. (C)

This argument is certainly not totally acknowledged by economists. There are significant differences in labor costs (real and nominal) across national boundaries, but differences in relative (not absolute) costs are the foundation of mutually beneficial trade. Certainly equivalent quotas have nothing to do with it.

28. (A)

Of the items listed, only the general reduction in the corporate tax rate was part of the Tax Reform Act of 1986 and worked to lower the effective cost of capital. Even without knowing that, however, the correct answer is clear because only the general rate reduction would serve to lower the cost of capital. Eliminating the tax credit, reducing the potential for accelerated depreciation, including intangible capital in the tax base, and contracting the interest rate deduction would all increase the effective cost of capital.

29. (C)

The ratio of the marginal utilities of A and B is

$$[30/20] = 1.5;$$

and the ratio of their prices is

$$[70/50] = 1.4 < 1.5.$$

Only if the consumption of A were increased and the consumption of B correspondingly decreased could you (1) stay within your budget constraint and (2) move the ratio of marginal utilities closer to the ratio of prices. Note that increasing the consumption of A would lower the marginal utility of A and that increasing the consumption of B would increase the marginal utility of B. The numerator of the ratio of marginal utilities would thus fall and the denominator would rise.

30. (B)

Price in excess of marginal cost means that perfect competitors not necessarily imperfect copmpetitiors should increase their output. Consider a monopolist, for example. Monopoly profits are maximized when marginal revenue equals marginal cost and when marginal revenue falls short of price. Clearly, then, a monopolist's profits are maximized when price exceeds marginal cost. When output is increased, of course, price should fall.

31. (C)

Trying to set monetary policy to achieve stable interest rates tends to make the LM curve flatter. As a result, any variation in the IS curve is translated into more variation in GNP but less variation in interest rates. Only answer (C) notes this change. The answer about the international capital account is also incorrect because those accounts are more sensitive to changes in interest rates than they are to changes in GNP.

32. (A)

Investment drives growth, and savings is required to finance investment. Recall that a condition for macroeconomic equilibrium is that investment equal the sum of foreign, private, and public savings. Without savings, therefore, growth is impossible. Developing some excess of income over consumption is thus an absolute necessity for growth.

33. (D)

Typically, consumption is positively correlated with income, and negatively correlated with the interest rate. As income increases, consumption generally climbs and people devote some of the increase to more spending. When the interest rate increases, however, the opportunity cost of not saving increases. Meanwhile, the marginal propensity to consume is positive, but less than unity (otherwise people are spending more than one dollar more for every extra dollar that they receive). As you consider the equations given in the answers, you are looking for (1) a positive coefficient for Y that is less than unity, and (2) a negative coefficient for the interest rate. Only (D) satisfies both of these conditions.

34. (A)

Given an inelastic supply of an input, the supply schedule of a product should be inelastic. Even if the supply of the input is perfectly inelastic, however, the supply curve of the product need not be vertical. There are always ways of influencing the marginal product of a scarce input even if the available quantity of that input is limited. In the question, fertilizer and irrigation could both improve the productivity of the land at a price, even though only a specified quantity of land could support a wheat crop. As the price of wheat rises, these options might be exploited to increase the quantity supplied.

35. (A)

Market power is really power over price, and that is available to a firm only if it faces a demand curve with some slope to it. Marginal revenue never exceeds price. Average costs can fall over large quantities in competitive markets if they are big enough; average costs can turn up quickly in imperfectly competitive markets if they are small enough. Price leadership is a model of imperfect competition that does not involve product differentiation across firms. Decreasing returns to scale hardly ever inspire imperfect competition much less serve as an essentially distinguishing characteristic. Only answer (A) rings true.

36. (A)

The positive correlation between government spending and the GNP gap makes the IS curve steeper than it would have been otherwise. Why? Because any reduction in GNP supporting equilibrium in the goods market, that might be suggested by a higher interest rate, would at least be partially offset by an increase in government spending. Any change in the interest rate should therefore cause a smaller change in the goods market equilibrium, and thus more inelasticity between output and interest rates.

With a steeper IS curve, random shocks to the LM curve cause less variation in GNP and more variation in interest rates. Setting monetary policy, in part to offset this increase in interest rate fluctuation, should, provide a more attractive policy goal alternative.

37. (B)

Steady state requires that the per capita capital stock be constant. The savings rate determines the rate of accumulation of capital. Natural forces determine the rate of growth of the population. If the capital-labor ratio is to be constant, therefore, saving must be balanced so that the equivalent rate of investment covers (1) depreciation and (2) enough capital stock growth to match labor's rate of growth. Only answer (B) reflects this connection.

38. (C)

By the end of two years, an increase in permanent disposable income of $1000 will be fully reflected in YDP. Why? Because the equation that defines permanent disposable income includes only this year's and last year's income. The applicable marginal propensity to consume is thus the coefficient of YDP in the consumption function, and .8 x $1000 = $800 will be the observed increase in consumption.

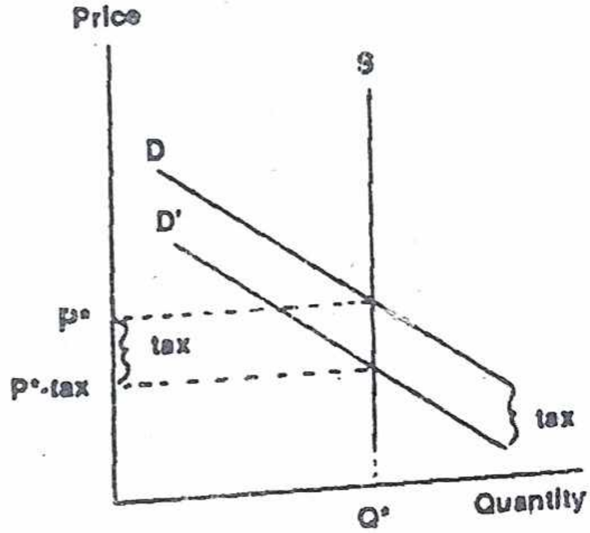


Figure A5

39. (A)

A commodity's return is in the nature of an economic rent only if its supply is perfectly inelastic; i.e., it is available in a fixed quantity regardless of price. Figure A5 shows such a supply curve with S. A tax on the consumption of this commodity could then be modeled as a downward shift in the effective demand curve facing suppliers, from, say, D to D'. Why? Because consumers are only willing to pay P* for Q* regardless of whether all of the money goes to the supplier or some of it goes to the government. The vertical distance between D and D' is the tax, and it is clear that the price received by suppliers is diminished by the full dimension of the tax.

40. (B)

If the firm is producing at the minimum of the average cost curve with average cost equal to $1.75, it must also be producing where marginal cost equals $1.75. Why? Because marginal cost equals average cost at the minimum of the average cost curve. At the present output, therefore, marginal revenue(=$2.00) is greater than marginal cost (=$1.75). Were the firm to increase output, revenue would therefore increase faster than costs and profits would improve. To increase the quantity demanded to match this advantageous expansion in output, the imperfect competitor should call out a lower price.

41. (A)

Lower growth expectations imply less tax revenue (tax structure fixed by applied to a smaller level of GNP) and perhaps higher government spending (more social programs like unemployment compensation, welfare aid, etc.): in short, a deficit that is higher than would be expected with more robust growth (or a smaller surplus, perhaps). In either case, public saving would be smaller than otherwise expected, and interest rates should therefore be higher as investors compete more heavily with government for scarce financing.

42. (E)

An increase in the capital-output ratio indicates that the capital stock is climbing, over time, faster than GNP. A decline in the productivity (the marginal product) of capital is to be expected as the capital stock grows, and would be consistent with this observation; i.e., that diminishing returns have set in. It is not necessary that the marginal product of capital fall to zero for this to happen. Nor is it necessary that the share of capital climb if the productivity of capital falls fast enough.

43. (C)

Every dollar increase in disposable income is eventually included in permanent disposable income, so the long run marginal propensity to consume is the coefficient of YDP in the consumption function; i.e., the long run MPC is 0.8. In the short run, however, only 75 cents of every dollar increase in disposable income appears in YDP in the first year, so the short run marginal propensity to consume must be (.75) (.8) = 0.6. Answer (C) is thus correct.

44. (B)

For a set of usually shaped supply and demand curves with finite and nonzero price elasticities, the dynamic cobweb scenario does the following: Given an observed price (the price in this period's market), suppliers determine how much they want to produce in the next period. Given that that quantity will be supplied, the market clearing price is determined by what consumers are willing to pay for that quantity; i.e., the price is read from the demand curve. Suppliers see that price, and make quantity decisions for the next period; and so on. . . .

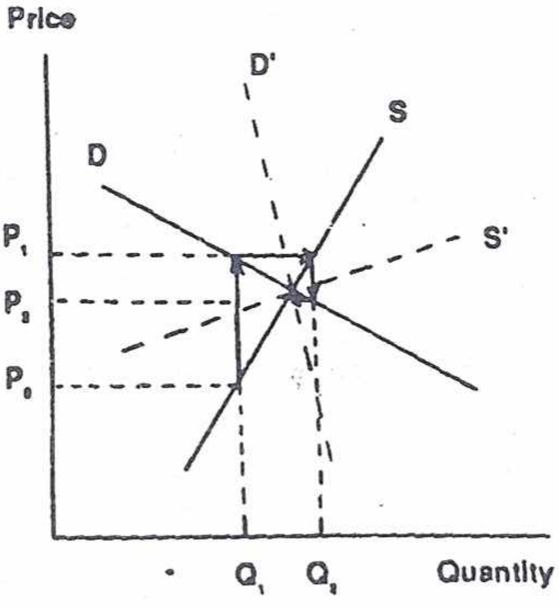


Figure A6

Figure A6 illustrates the process with arrows. The current period price is P_0. Given P_0, suppliers produce Q_1(read from the supply curve) for the next period. In that period, Q_1 can sustain a price of P_1 (read from the demand curve). Given the price P_1, suppliers produce Q_2 in the second period, etc. . . . Whether or not this process converges to equilibrium depends upon a Marshallian elasticity condition.

Even without recalling that condition, though, the answers can be evaluated using the geometry of Figure A6. Only answer (B) moves one of the curves drawn there in a direction that guarantees continued convergence. Drawing a demand curve displaying less elasticity (steeper through the intersection like D') can create a situation in which the cobweb grows without bound. Drawing a supply curve with more elasticity like S' does the same. Answer (D) combines both of these bad scenarios. A counterexample to answer (E) is provided in Figure A-6.

45. (A)

If marginal revenue exceeds marginal cost for any firm, that firm should increase its output. Why? Because any increase in output increases revenue faster than it increases cost, so profits go up. The price should fall a bit as quantity climbs, but that effect is already included in the construction of marginal revenue, so it does not mitigate against this result.

46. (A)

An enlarged spending response to recession should make the IS curve steeper. Why? Consider a circumstance in which an increase in the interest rate causes a reduction in investment spending. Real GNP, consistent with equilibrium in the goods markets, would then fall and increase the gap between actual and potential real GNP. This response is illustrated by movement from (Y*,r*) to (Y",r') along IS curve IS in Panel A of Figure A7; Y*>Y" and r*<r'. If, however, government spending were to increase more quickly as that gap grew, then the reduction in investment spending, would be partially offset by an increase in government spending and the gap would not grow as large. Actual real GNP would not, in other words, fall as far in response to the higher interest rate; it might, for example fall only to Y'(>Y") in Panel A. Putting (Y',r') on an IS curve produces the steeper curve denoted IS'.

A steeper IS curve means that a change in either the money supply or the price level has less of an effect on equilibrium real GNP. To see this, consider a price increase (or a reduction in the money supply). The LM curve would shift from LM (supporting point (Y*, r*) to LM'. Against IS, real GNP falls to Y"; against the steeper IS', real GNP falls only to Y+(>Y"). Putting these points on the aggregate demand graph of Panel B, it is clear that aggregate demand is steeper: at the same time and for the same reason, monetary policy is less effective.

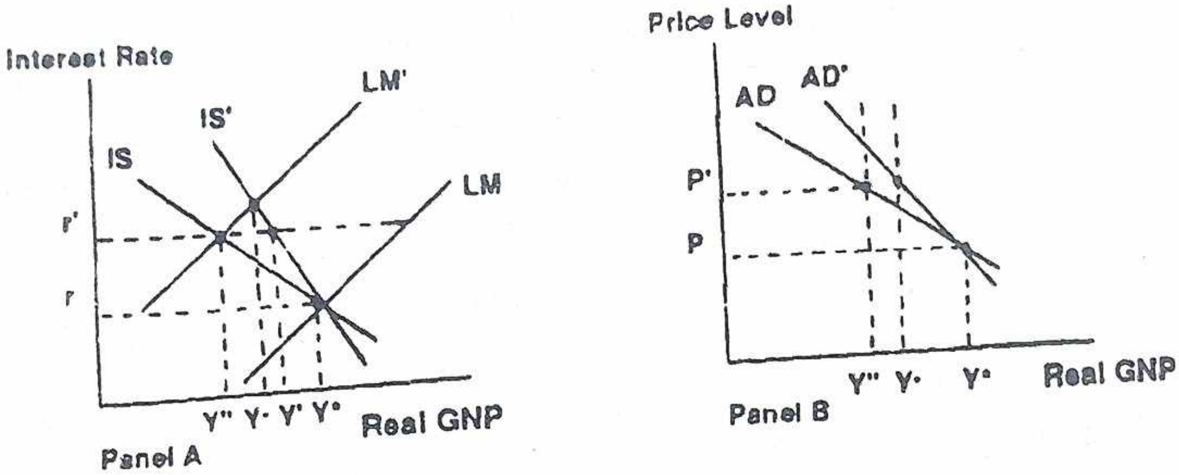


Figure A7

47. (B)

A general sales tax is proportional on consumption expenditures. Tax revenue collected, therefore, is

$$T = [t \times C] = t \times [Y - S],$$

where t equals the tax rate, C represents consumption, Y represents (national) income and S represents saving. To the extent that wealthier people save more (and poorer people save less), wealthier people avoid more tax and pay a smaller proportion of their incomes to the government. In fact, the average tax rate equals [t – (S/Y)] falls directly as S climbs. The general sales tax is therefore thought to be regressive.

48. (C)

This economy is in equilibrium when Z2 = 0. Plugging information provided into the aggregate demand schedule, one finds that the economy is initially in equilibrium at potential GNP = 2000. That is,

$$\begin{aligned} AD &= 1400 + 1.5G + .75[M/P] + 0 \\ &= 1400 + 1.5(100) + .75[600/1] \\ &= 2000. \end{aligned}$$

After the price shock, Z2 returns to zero, so the new equilibrium depends upon the price level consistent with returning to potential. Without anything else changing, that price level must be 1, which is achieved after an initial 20% inflation through the price adjustment equation, by subsequent years of disinflation. How? The 20% inflation causes price to climb above 1 and thus forces GNP below potential through the aggregate demand curve. With Y less than potential Y* and Z2 back to zero, the price adjustment equation then solves only for negative rates of inflation until Y returns to full potential. Only the second answer reflects both of these observations.

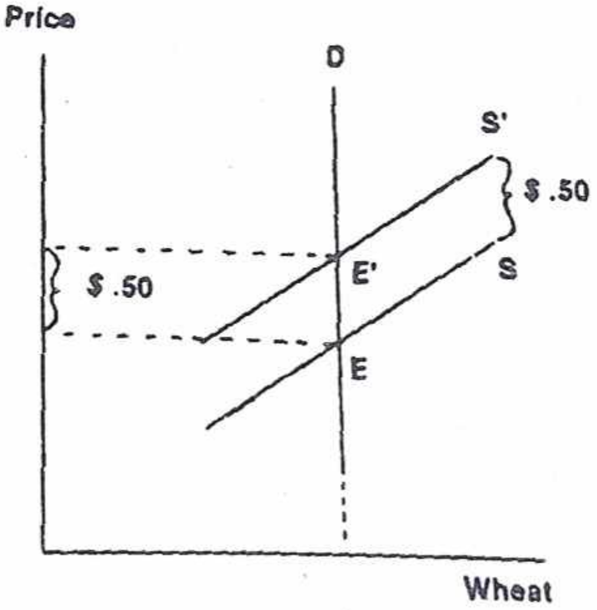


Figure A8

49. (B)

Consult Figure A8 to see this. The demand curve D drawn there is perfectly inelastic. The before tax supply curve is indicated by S, and the after tax supply curve by S'. Notice that S' is 50 cents higher at every quantity than S. In response to the tax, then, the price paid by consumers climbs by exactly \$.50 even while the market clearing quantity is unchanged. Intuitively, consumers pay the full tax in this case because they are not willing to reduce their quantity demanded. We know that because perfectly inelastic demand specifies a quantity demanded that is invariant to changes in price.

50. (A)

Starting from an initial position of long and short run equilibrium, an increase in the fixed cost of every firm moves the minimum of the average cost curve of every firm up a fixed marginal cost schedule. To the extent that some firms will leave the industry over time, due to the existence of negative economic profits, the supply curve shifts back, the equilibrium price of the market climbs, and the total quantity sold in the market falls. At the firm level, though, the higher price means that each firm must produce more output; movement up a marginal cost curve corresponds both with high price and higher output because marginal cost schedules are positively sloped. To rectify the disparity in the movement of quantities for those that remain, the prediction of higher price and output holds.

51. (A)

The only answer given that would not allow interest rates to rise is (A). This is because a decrease in taxes, all else equal, implies that consumers have more disposable income to use for additional consumption and savings. If it is not used for consumption then the tax cuts must have been saved. This addition to private savings then finances the reduction in public savings. Thus there is no required change in interest rates to attract additional sources of financing. This argument of tax cuts being ineffectual in changing consumption is known as the Barro-Ricardian equivalence theorem.

52. (D)

The key here is to recall that the community demand curve for a public good is the vertical summation of individual demand curves. While no single individual wants to purchase G, the community wants 50 units. Why? The combined demand curve for the 99 people is

$$148 - 1.48G = P$$

so that G* satisfying

$$148 - 1.48G^* = MC = 74$$

is $G^* = [(148-74)/1.48] = 50$. The first 50 people combine to demand nothing if the price climbs above \$50 = \$1 x 50; the second 49 combine to demand nothing if the price climbs above \$98 = \$2 x 49. Thus, the point (0, \$148) is on the community demand curve. The maximum amount that any or all of them would want if the good were free is 100 units; the point (100, \$0) is therefore also on the community demand curve. Since 100 units is precisely the maximum quantity demanded by all citizens, there is no "kink" in the community demand curve in this case; it is the straight line connecting (0, \$148) and (100, \$0) whose equation is $148 - 1.48G = P$.

53. (C)

Were it not for the risk, the firm would be sold for an amount of money for which the \$200,000 earned each year represents a 10% return on investment; i.e., it would sell for \$2 million. Why? Because potential investors facing a 10% opportunity cost would bid on projects with sure returns in excess of 10%; i.e., someone would always offer a higher price for the firm as long as the \$200,000 absolute return measured against that price represents a percentage return of at least 10%. There would, quite simply, always be a higher bidder until the price reached \$2 million.

With some risk that \$200,000 would not be returned indefinitely, though, the bidding would stop sooner so that the percentage return would be the sum of the riskless 10% and some premium reflecting that risk. The owner would never take less than the value of the capital, so the limits of the successful bid are \$1 million on the low side and \$2 million on the high side.

54. (C)

Neither prices nor wage rates effect the labor supply schedule; it depends upon individual preferences. On the other side of the labor market, since the demand curve for labor is the marginal revenue product of labor, the equation that describes the quantity demanded for a given wage and a perfectly competitive market for output is:

$$W = P \times MP_L$$

where W is given wage, and P is the price per unit of market, and MP_L is the marginal productivity of labor. If this is an aggregate demand curve and contracts hold real wages constant, though,

$$\text{constant} = [W/P] = MP_L.$$

The only way to change the quantity of labor demanded in this case would be a change in labor productivity. Neither monetary nor fiscal policy can do that. So, the labor situation is totally fixed with demand given by productivity and supply given by preferences. Fiscal and monetary policy can change neither, so they are ineffectual in addressing any excess supply problem. Only answer (C) notes this intransigence correctly.

55. (B)

A fall in the value of the dollar makes imports into the U.S. more expensive and exports out of the U.S. less expensive. As a result, exports should increase and imports should fall.

56. (D)

Algebra can make it clear. Using the I, C and G specifications to produce an IS curve and solving simultaneously with the LM curve provided, one finds that

$$Y = .833(M/P) + 2000$$

is correct. The algebra is, however, unnecessary. The typical aggregate demand curve has a negative slope; for the general form considered here, it must depend inversely and positively with price so that any increase in the price level reduces aggregate demand. In addition, the information set forth in the question requires that it display positive values for GNP when $P > 1$. Answers (A) and (B) show the correct sign for GNP for $P > 1$, but they show a positive slope; they cannot, possibly be correct. Answers (C) and (E) have the correct correlation between price and quantity, but GNP is never positive when $P > 1$; they cannot possibly be correct either.

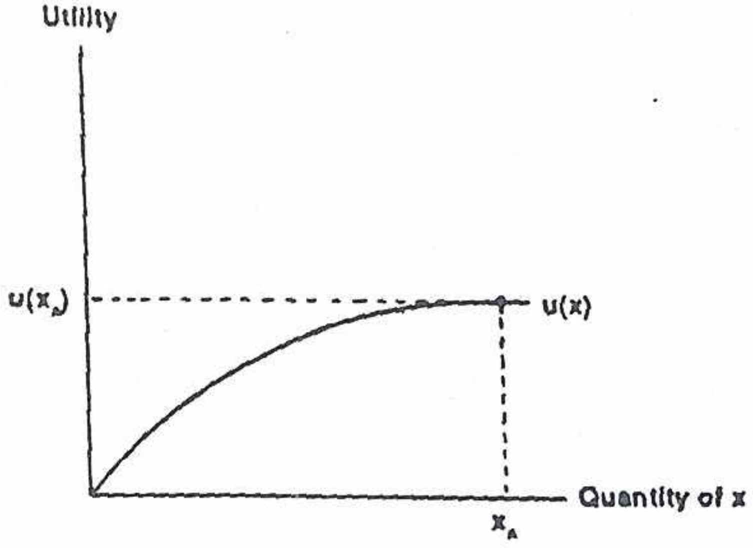


Figure A9

57. (A)

Figure A9 illustrates a utility function, U(X), for some good, either separable from all other goods in welfare or given some strong *ceteris paribus* assumptions; it will serve as an illustration. Marginal utility for this good is zero at point A, even though the total utility generated by consuming X_A is

$$U(X_A) > 0.$$

Point A is clearly the maximum of the schedule, so $U(X_A)$ is the maximum level that can be achieved by consuming X. It need not, however, be an equilibrium point. In fact, unless the price of X is zero or the individual has an unlimited income, it will not be an equilibrium point.

58. (C)

Inelastic demand means that marginal revenue is negative; clearly then, marginal revenue must be less than marginal cost even if the monopolist's output can be produced for nothing. As a result, a reduction in output will increase profits. Why? Any reduction in output will increase revenue while it reduces costs so that profits must improve. A higher price is therefore always required because only an increase in price will inspire the necessary reduction in the quantity demanded.

59. (B)

Inflation, by definition, becomes a potential concern as the actual unemployment rate approaches the natural rate from above. If the natural rate were 6%, then inflation should be a concern with unemployment falling so quickly from 7.7% to 5.8% < 6%. A growth recession refers to an economy that is growing, but not quickly enough to keep the unemployment rate from climbing over time; it does not apply to this question. Only answer (B) correctly applies the definition of the natural rate.

60. (E)

The equivalence of tariffs and quotas is widely known. Surely, there exists a quota that will achieve the same restricted level of imports or exports as any tariff. Which one? The one that matches the level of trade that would occur given the tariff. If, in addition, licenses are auctioned to importers equal to the level of trade allowed by the quota, then those licenses will command a price equal to the difference between the world price of the import and the price that the domestic market will bear. This is precisely the value of the quantity equivalent tariff, so price times quota will certainly raise exactly the same level of revenue.

61. (C)

Just as would be expected by an application of any forward looking theory of investment, elimination of the investment tax credit in January of 1987 caused people to "hurry up" their projects in 1986 to keep them eligible for a tax reduction. Since projects that might have been begun in early 1987 were brought to fruition in late 1986, investment fell correspondingly after the first of the year when the credit no longer applied.

62. (B)

An increase in the price of X will cause your real income to fall unless you can substitute completely out of the consumption of X with no reduction in utility. Since X and Y are not perfect substitutes, this is impossible. The income effect that influences your consumption of Y should therefore be negative. Even though you are likely to consume more Y after the price change, the income effect will mitigate against the substitution effect as long as Y is not an inferior good.

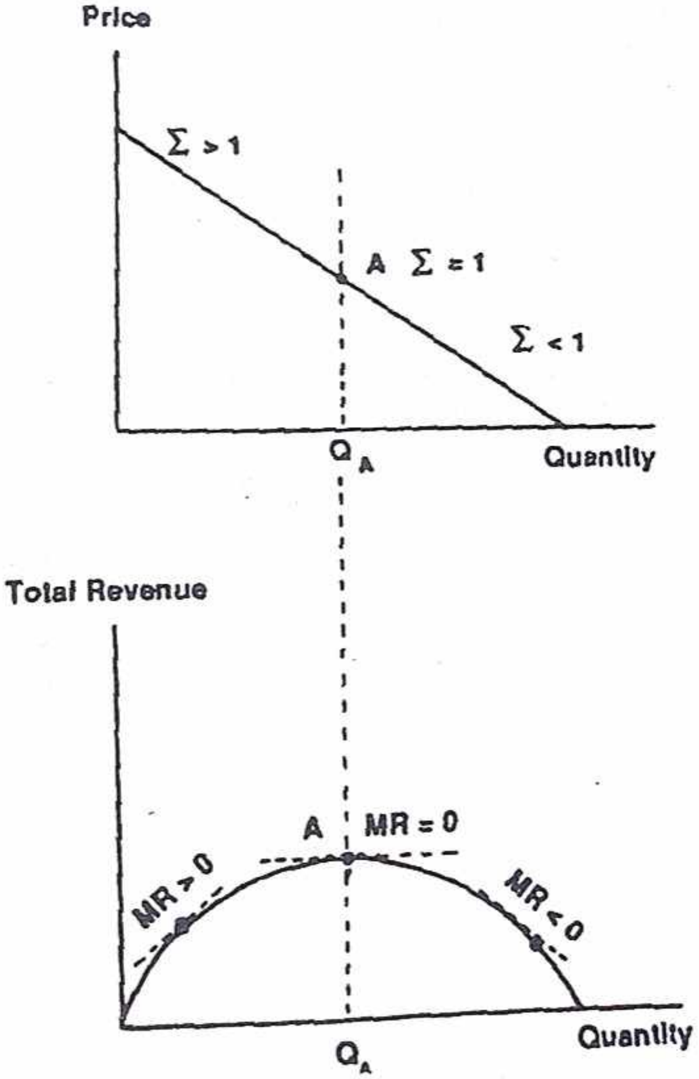


Figure A10

63. (A)

Figure A10 illustrates the relationship for a straight line demand curve. The price elasticity of demand is unity at the peak of the revenue curve (point A) where marginal revenue (MR) is zero. For output smaller than Q_A, the price elasticity of demand is greater than one (in magnitude) and the revenue curve is climbing. Positive MR (a positive slope on the total revenue curve) therefore corresponds to elastic demand. For output greater than Q_A, the price elasticity of demand is smaller than one and the revenue curve is falling. Negative MR therefore corresponds to inelastic demand. Only answer (A) correctly describes even part of this relationship.

64. (E)

The reserve requirement is 15%. Since there is $60 billion (throughout) in total reserves and there are no excess reserves, total demand deposits (DD) must be

$$.15\,(DD) = \$60;\ DD = \$400.$$

Currency demand is 40% of demand deposits, or $160, so the total money supply must be $560.

Starting there, an open market sale of $1.5 reduces the money supply. Only answer (E) starts at the right level and shows the required reduction.

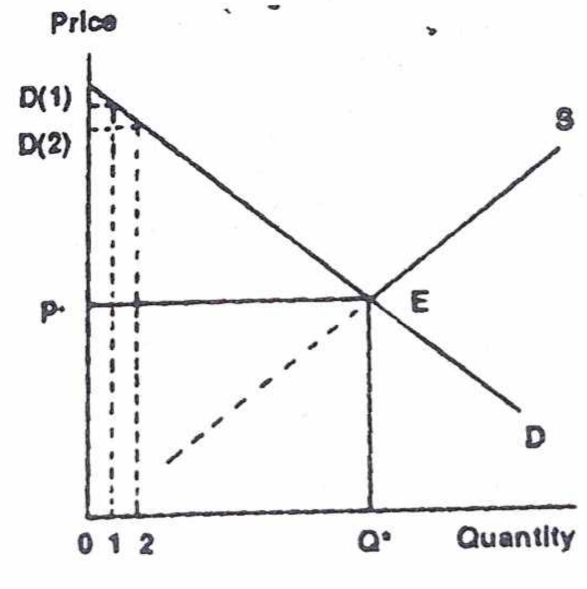


Figure A11

65. (B)

Answer (B) is essentially the definition of consumer surplus. The other statements are true and are implications of using the tool of consumer surplus, but they are not the reflections of the idea. Figure A11 illustrates this best. There, equilibrium price is P^* and equilibrium quantity is Q^*. The shaded rectangle, OP^*EQ^*, is the total amount that consumers are spending on Q; i.e. it is simply $P^* \times Q^*$. The area under the demand curve from the origin to Q^* is the amount that consumers would have been willing to pay for Q^* if they had been required to purchase Q one unit at a time. Why? Consider the first unit. The demand curve indicates that someone would have paid D(1) for it. The second unit? Someone would have paid $D(2) < D(1)$ for it. And so on for all units up to the "Q^{*Th}" unit for which someone would have paid P^*. Adding up all of these "willing to pay" price equals the area under the demand curve. The difference between that area and the total expenditure area is consumer surplus.

66. (D)

The key to shutting down is covering average variable cost with the price. Fixed costs and average fixed costs have nothing to do with that decision, at least in the short and short–medium runs. Profits are maximized or losses are minimized where price equals marginal cost. Information about either of these conditions is not provided in the questions, so definitive statements about shutting down or reducing losses are illfounded. The only thing that can be deduced for certain is that the firm is losing money. Only answer (D) correctly identifies both this conclusion and the considerable ambiguity that surrounds the rest of the critical parameters.

67. (D)

Equilibrium is defined here by the equality of Pi, PE and PF; i.e. forecast prices, expected prices and actual prices coincide. Each firm therefore produces $Yi = 15(0) + 7$ in equilibrium, so 200 firms produce $7 \times 200 = 1400$ units of output.

68. (A)

The real rate of interest is, by definition, the arithmetic difference between the nominal rate of interest and the rate of inflation. Notationally, if r represents the real rate of interest, i the nominal rate of interest, and π represents the rate of inflation, then

$$r = i - \pi$$

In a period of inflation, $\pi < 0$ so that r equals i plus some positive number; it must be, therefore, that $r > i$.

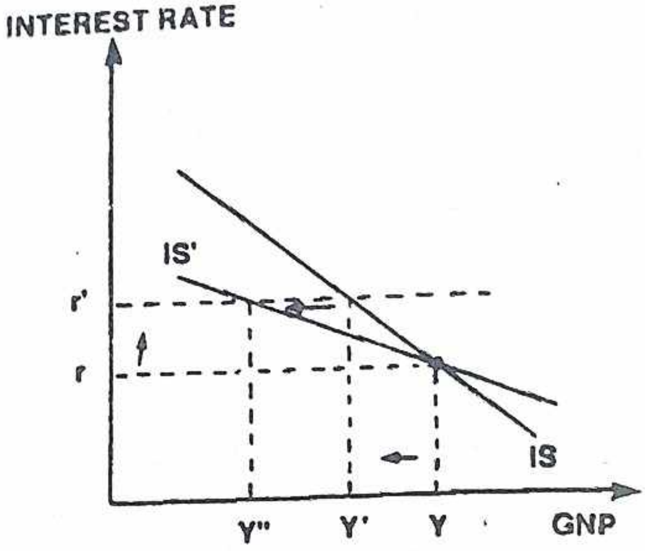


Figure A12

69. (D)

Greater sensitivity in net exports to changes in the interest rate means that as interest rates climb, for example, more capital flows into the country, higher demand for the domestic currency is generated, the value of the currency climbs more, and the expected increase in imports and decline in exports becomes more pronounced. The IS curve should therefore become flatter.

To see why, consult Figure A12. There, IS represents an initial set of (GNP, interest rate) pairs that set aggregate demand equal to aggregate supply. Note, in particular, that an increase in theinterest rate from r to r' creates a reduction in sustainable GNP from Y to Y'. If net exports become more sensitive, the reduction in GNP must be enlarged, according to the argument just presented, and so it must fall to some level like Y". Connecting (Y", r) with (Y, r) then produces the flatter IS'.

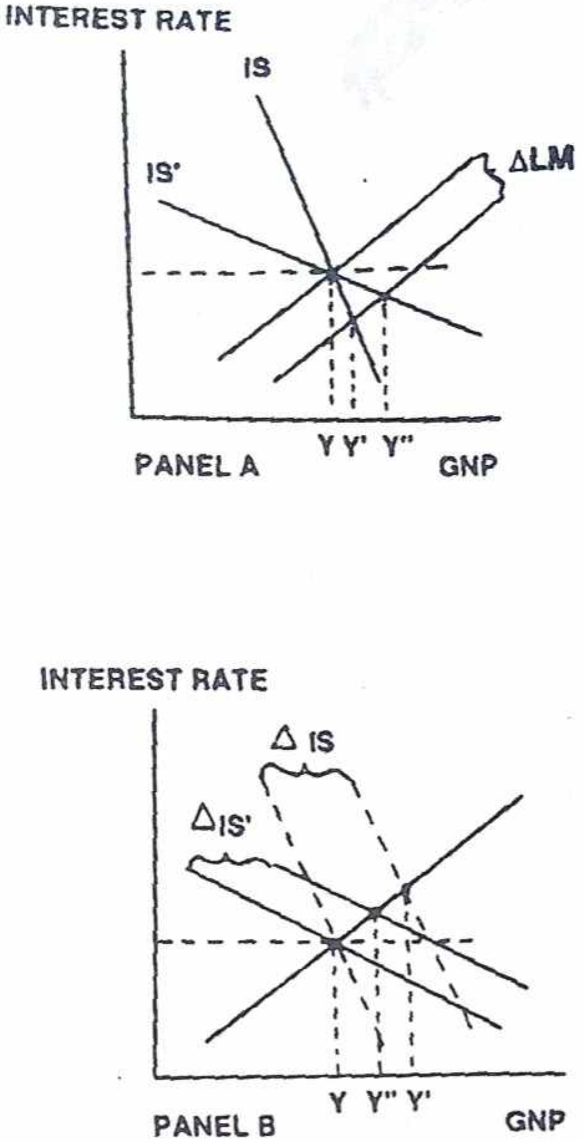

INTEREST RATE
IS
IS'
ΔLM
Y Y' Y"
PANEL A
GNP
INTEREST RATE
Δ IS
ΔIS'
Y Y" Y'
PANEL B
GNP

Figure A13

70. (C)

An increase in the sensitivity of net exports to changes in the interest rate means that the IS curve is flatter than it would otherwise have been. To see why, simply note that an increase in the rate of interest causes net exports to fall as the resulting increase in demand for the domestic currency causes exports to become more expensive and imports to become less expensive. A greater change in GNP associated with a higher interest rate therefore rotates the IS curve down – to a flatter position (see Figure A12).

With that change in the slope of the IS curve established, it is easy t show that monetary policy should be more effective and fiscal polic less. Refer to Figure A13. In Panel A, the same stimulus in monetar policy (a shift in the LM curve from LM to LM') is applied against tw IS curves. Against the flatter IS curve, GNP climbs to Y" (> Y') and the associated reduction in the interest rate is less dramatic; monetary policy is thus more effective against the flatter curve. In Panel B, the same fiscal stimulus is applied for two IS curves against the same LM schedule. With the flatter IS curve, GNP climbs only to Y" (< Y'), even with a higher interest rate.

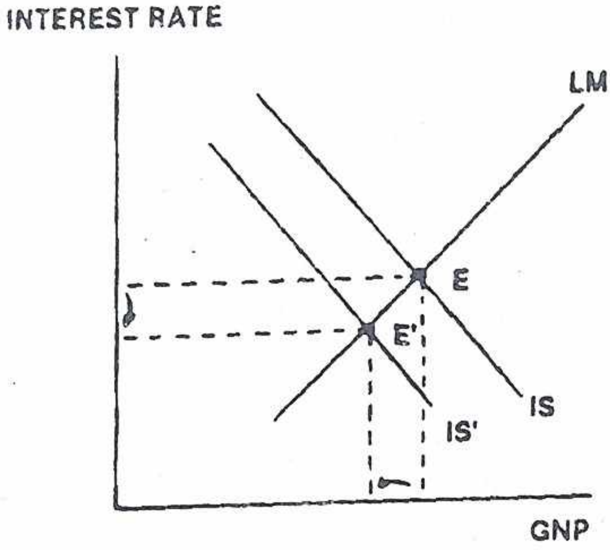


Figure A14

71. (B)

An increase in taxes is contractionary fiscal policy that causes the IS curve to shift in (from IS to IS' in Figure A14). The result should, therefore, be a reduction in GNP, but not to the full extent of the Keynesian multiplier. Smaller GNP means that interest rates must fall a bit. Why? So the assets demand for money can climb to counterbalance the contraction in transactions demand associated with a smaller GNP. Notice that movement from equilibrium E to equilibrium E' in Figure A 14, captured by movement along a fixed LM curve as the IS curve shifts, shows this interest rate effect as well.

72. (D)

Price is equal to $10 and average cost is equal to

$$[\$19{,}000/2000] = \$9.50 < \$10.$$

Making some profits, there is no way of telling whether or not they could be higher if output were adjusted. Profits are maximized when price equals marginal cost, and that may occur at an output that is higher than, lower than, or equal to 10,000 units. Only answer (D) reflects this ambiguity.

73. (E)

Net exports represent the difference between exports and imports. Imports climb with GNP, so net exports should be negatively correlated with income. An increase (a reduction) in the interest rate meanwhile causes capital to flow into (out of) the country and that puts downward (upward) pressure on net exports. For the U.S., for example, higher interest rates make U.S. assets more attractive, increase the demand for the dollar, increase the value of the dollar, and thus make exports more expensive and imports less expensive. As a result, a negative correlation between the interest rate and net exports should also be expected.

74. (C)

In equilibrium, given this Lucas/Rational Expectation view of supply, a 10% increase in the money supply produces a 10% increase in prices. Why? Because the Lucas supply construction implies equilibrium GNP at 1000 (full potential GNP) with P = PF. Before the change in the money supply, Y = 1000 is defined as equilibrium with P = PF and P must equal 1 for aggregate demand to match that figure; i.e.

$$700 + .75\,(400/1) = 1000.$$

After the change, output must still be 1000 because potential GNP with P = PF is still 1000. The price index must therefore have climbed to 1.1 so that

$$700 + .75(440/1.1) = 1000$$

and aggregate demand again matches supply. Only answer (C) notes this reaction.

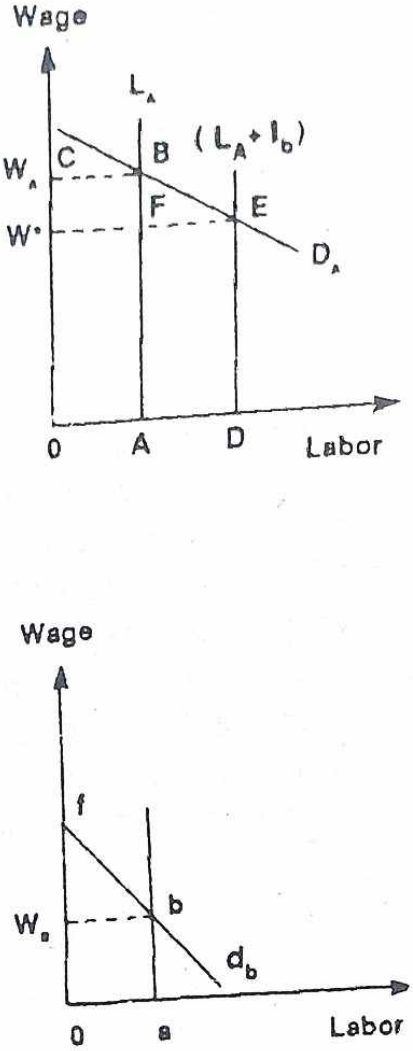


Figure A15

75. (B)

Consult Figure A15. There, original equilibria are $W_A > W_B$. Moving all of the labor originally in Market B to Market A results in a wage W* at $(L_A + l_b)$, where $W_A > W^* > W_B$. The wage paid to those originally employed in Market A should therefore fall while the wage paid to those originally employed in Market B should rise. Total product(and hence labor income) in Market B collapses to zero, a loss equal to the area oabc, while the total labor income in Market A changes from OABC to ODEW*.

The total labor income reduction, as a result of the adjustment, is equal to the sum of the areas, W*FBC + Oabc, while the total labor income increases as a result of the same adjustment and is equal to the area of ADEF. Without further information, it is ambiguous whether ADEF is >, <, or = W*FBC +Oabc.

76. (B)

Net exports are statistically defined as {[exports] minus [imports]}. They usually fall or turn negative as domestic GNP climbs because imports expand with income. (Consumption is positively correlated with income and is shared to some degree by both domestic and foreign suppliers of home goods and services). Net exports also tend to fall with higher domestic interest rates. Higher domestic interest rates increase the demand for domestic currency, thereby increasing its price and making domestic goods more expensive abroad and foreign goods less expensive at home. Exports tend to fall, therefore, while imports climb.

77. (C)

The average cost of this firm is $1.60 because the total cost of producing 10,000 units of output is $16,000. Since it is producing at the minimum of the average cost curve, marginal cost is also $1.60. Since price therefore exceeds marginal cost, the firm should expand its output and sales beyond 10,000 units until price equals marginal cost. It has no power over price, since it is in a competitive market; but the only direction price could go, with output climbing, is down.

78. (E)

The question describes circumstances that breed natural monopolies. Declining marginal cost guarantees (1) that average costs are also falling and (2) that marginal costs are less than average costs. Only the last answer makes any sense in these conditions. Fixed costs are fixed costs and do not change. New firms would find it difficult to enter a market in which the existing firms can move down a cost schedule to both undercut their entry price and continue to make a profit. The typical firm's profit should, finally, converge to the monopoly (i.e. the maximum) profit.

79. (B)

Equilibrium requires that demand (the marginal revenue product schedule) intersect supply (the opportunity cost of leisure = the value of time); i.e. (H^*, w^*) solves

$$30 - .25H^* = -20 + .75H^* = w^*.$$

Algebraically, $H^* = 50$ and $w^* = \$17.50$. Setting $w = 20$ creates excess supply because the price is above equilibrium. The quantity then demanded and employed solves

$$20 = 30 - .25HD$$

from the demand curve; $HD = (-10/-.25) = 40$. The quantity that would be willingly supplied solves

$$20 - -20 + .75HS$$

from the supply curve; $HS = 160/3 = 53.3$. Excess supply therefore equals $53.3 - 40 = 13.3$.

80. (B)

Price equals total revenue divided by quantity, so price equals \$2.00. A monopolist faces a downward sloping demand curve, so price necessarily exceeds marginal revenue; but since marginal cost is given as \$2.00, marginal cost must therefore exceed marginal revenue. Profits would be increased if the firm cut back production and sold its diminished output at a higher price.

81. (B)

The marginal tax rate (the tax paid on the last dollar) is t; the tax system described in the question is therefore proportional and constant on the margin. On the average, though, it is progressive because the average tax rate increases with income. To see why, notice that

$$[T/Y] = t - t\,(E/Y)$$

climbs as Y climbs because (E/Y) converges toward zero. In the limit, the average tax rate climbs toward and approaches the marginal tax rate.

82. (B)

This is not the classic balanced budget multiplier. A \$10 billion increase in government spending creates an increase in equilibrium GNP of

$$[\$10 \text{ billion}/(1-b+m)].$$

Meanwhile an increase in tax receipts of \$10 billion reduces GNP by

$$[b \times \$10 \text{ billion}/(1-b+m)].$$

The combination therefore produces an increase in GNP equal to

$$(\$10 \text{ billion}) [(1-b) / (1-b+m)] < \$10 \text{ billion}$$

because $(1-b) < (1-b+m)$. The change is positive because $(1-b) > 0$. The reason for the breakdown in the balanced budget multiplier result lies with imports depending upon GNP, and not with disposable income. The first effects of the tax increase on imports are therefore postponed until after the first round change in GNP.

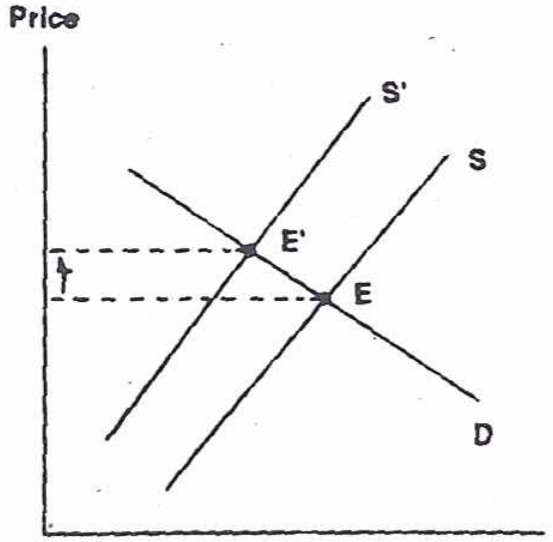


Figure A16

83. (B)

The immediate effect of the drought is the indicated sharp reduction in the supply of beef; in a supply and demand context, this would be represented by a leftward shift (at any price, less beef can be supplied) or an upward shift (for any level of supply, a higher price is required to cover costs – shipping water, more cattle for a given weight of beef, etc...) in the supply curve. This is shown in Figure A16 by a move from curve S to S'. Given the usual downward sloping demand curve (drawn as schedule D in the Figure with some elasticity, because a substitute meat exists), the equilibrium moves from E to E' with a higher price. It is this higher price that causes the substitution of pork, but that is already captured by the demand curve -- it is part of the very construction of the demand curve for beef. As a result, no further adjustment is required in the graphical picture of the beef market.

84. (A)

A reduction in transactions demand means that the assets demand for money must increase for any level of GNP to preserve equilibrium in the money markets. The only way that this can happen is for the interest rate associated with any level of GNP along an LM curve to fall, just as it would with an increase in the money supply. Given the usual downward sloping shape of an IS curve, GNP should therefore climb as interest rates fall.

85. (D)

Average costs are U-shaped, so answer (E) is clearly incorrect. The question is whether or not rising marginal costs guarantee that average costs are moving in only one direction. Since marginal cost is rising when it intersects average cost at its minimum, the answer is no. Slightly to the left of the minimum, marginal costs are rising and average costs are falling. Slightly to the right, marginal costs are still rising and average costs are rising. At the minimum, average costs are constant even as marginal costs climb. Furthermore, average cost cannot remain constant because marginal costs would also have to be constant, and that condition is violated by the information given in the question.

86. (C)

In an open economy, one must consider that "aggregate demand leaks" abroad diminish the stimulative effects of any policy adjustment through the import function. Higher levels of GNP typically create higher levels of imports, which represent spending that does not immediately recycle through the economy as it would if the economy were closed to international trade. The full force of the multiplier effect is thus reduced for the domestic economy to the degree that spending does not recycle. There is, however, no general distinction to be made between government spending and investment as a source of the stimulus. Only answer (C) reflects both the reduction in the multiplier and the lack of distinction between the two sources.

87. (C)

This labor union would need an inelastic demand for labor so that the higher wage would not inspire much of a reduction in the quantity of labor demanded. Since the demand for labor is a derived demand, this inelastic condition corresponds to an inelastic demand for the ultimate good (for whose production union labor is required). Perfect competition is neither a help nor a hindrance in this case.

88. (C)

The key is to recognize that a classical economy has perfectly flexible prices, so that actual real GNP is always maintained at potential real GNP. A reduction in aggregate demand caused by an increase in saving would therefore have no effect on real GNP. It would simply cause prices to fall. The paradox of saving is not a concern for a classical economist, especially in a closed economy.

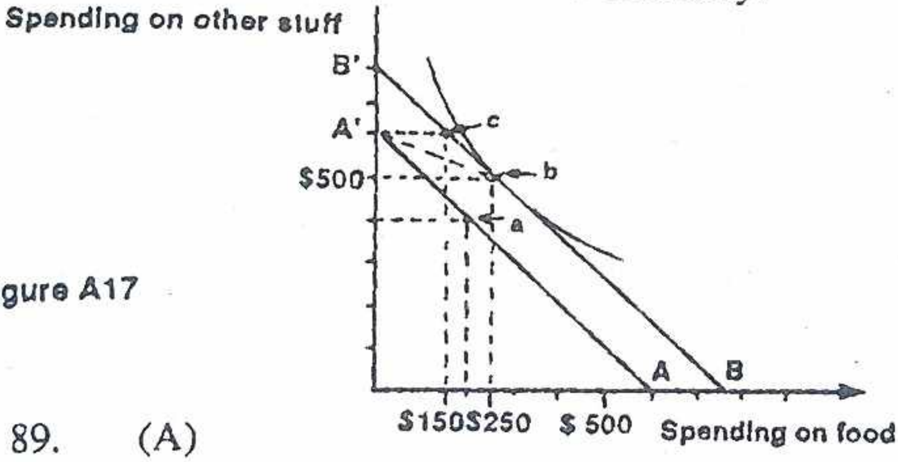


Figure A17

89. (A)

Consider Figure A 17. The family's initial budget constraint is given by line A'A; point a ($200,$400) is the utility maximizing choice. Th monetary grant would move the budget constraint out in parallel to line B'B; point b would then maximize utility at ($250, $500). An indifference curve is drawn to emphasize that selection. Program B would move the budget constraint out in parallel, but capture only the part of line BB below the option of spending all $600 in earned income on other stuff. Its budget constraint is thus line CB, but point b is still the utility maximizing selection. Program C would create a budget constraint that moved down from point A' at a slope of –.4 until it reached point b; thereafter, it would move down at a slope of –1. Again, point b is the utility maximizing choice. Since the family picks the same consumption point in all three cases, it is indifferent across the three alternatives.

90. (D)

Since A will be the exporting country, the demand that the producers in country A will see for their product will increase; they will favor free trade. Producers in country B, the importing country, will see an increase in competition and a decline in the price that they can charge; they will oppose free trade. The consumers in country B will, meanwhile, see a lower price for X, and they will favor free trade. Since the increase in production in country A might cause the domestic price of X to climb, though, domestic consumers in country A would oppose free trade.

91. (B)

A change in the own-price of a good (e.g.beef) is reflected in movement along a demand curve whose very construction assumes fixed tastes, incomes, and prices of other goods. Changes in any of these fixed parameters can cause the entire demand curve for beef to shift. An increase in the price of a substitute good should cause people to demand more beef at every price – a shift outward in the demand for beef. An increase in the money income of beef consumers should do the same thing. An increase in the appeal of pork might do the opposite. Only a fall in the price of beef allows for a fixed demand curve for beef.

92. (D)

Let g_w represent growth in the wage rate and g_p represent growth in prices (i.e. wage inflation and price inflation, respectively). Let employers be interested in the smallest possible g_w. According to the first formula,

$$g_w = .04 + .5g_p;$$

in the second,

$$g_w = .02 + .7g_p.$$

The first has a larger fixed component, but responds less through the cost of living component to price inflation; the second has a smaller fixed component, but responds more through the cost of living component to price inflation. Setting the two wage formulae equal and solving for g_p shows $g_p = .1$ (10%) would produce the same wage settlement in both cases. With inflation below 10%, the second formula with the smaller fixed component and the larger COLA produces the smaller wage increase. With inflation greater than 10%, the first formula with the larger fixed component and the smaller COLA, produces the smaller settlement. An employer seeking to minimize unit labor cost increases would therefore favor the second scheme if he or she expected price inflation to run less than 10% and the first if expected price inflation were more than 10%.

93. (E)

Marginal costs depend entirely upon variable costs. Why? Because marginal costs reflect the increase in costs that must be covered if one is to increase output by, for example, 1 unit. Fixed costs have nothing to do with this increment. They are costs that must be paid regardless of the level of output – 10 units, 10,000 units, 1,000,000 units, whatever. A change in fixed costs, therefore, has no effect on the marginal cost curve. Average costs would shift up, but the minimum of the average cost curve would climb along a fixed and stable marginal cost schedule.

94. (B)

The imposition of a protectionist measure usually means a one shot opportunity for domestic prices to climb; restricted supply creates excess demand that can be eliminated by a price increase which will lower the quantity demanded while the quantity supplied rises. This price increase causes a bit of inflation, but it subsides to zero in the long term. Prices end up higher, but their rate of change converges back to the original pace.

95. (E)

True economic depreciation is the rate of change of the value of an asset; the value of an asset is the present value of the stream of net returns that it will generate. For a perpetual asset returning a constant \$R given an interest rate i, the percent value is [\$R/i]. For the asset described in the question, then, the present value at the beginning of year 1 is \$10,000. One year later, the present value is still \$10,000. Why? Because the return that is missed after one year appears sometime in the infinite future – one that has a discounted value of \$0. The true economic depreciation is zero for the asset described here and for perpetuities in general.

96. (E)

When the return to a factor of production is classified as an economic rent, it means, by definition, that the total supply of that factor is fixed and perfectly inelastic. For any single demander of that factor, though, the supply curve has some finite elasticity depending upon the demand elasticities of the other users. Suppose, for example, that two firms shared 100 units of some input 40-60 at a price of \$10. To trace the supply schedule facing any one of the firms, one needs to see how the availability of the input changed as,for example, the price rose to \$11. If the second firm displayed a unitary price elasticity of demand for the input, this 10% increase in the price would produce a 10% reduction (4 units) in the quantity demanded. 64 units of the input would therefore be available to the first firm; the point (64,\$11) would lie on the supply curve facing the first firm; the price elasticity of supply would be less than 1. Now suppose that the second firm displayed a price elasticity of demand of 2. The same 10% price increase would then inspire an 8 unit reduction in demand, and the point (68,\$11) would lie on the supply curve facing the first firm with an elasticity greater than unity.

Depending upon the elasticity of demand of the second firm, therefore, the price elasticity of supply facing the first firm could vary widely.

97. (E)

Starting at 2 points below the target rate of unemployment, Okun's Law tells us that it would require at least 3% x 2 = 6% growth in actual GNP just to reach full employment given the 1987 level of potential GNP. If that potential had grown in the meantime by 2 points, however, unemployment would still be 2 points below full employment. A further increase in actual GNP of 3% would be required to close to within 1 point of full employment. The sum of 6% and 3% is the correct answer – 9% growth in actual GNP.

98. (A)

Money prices reflect scarcity in a market system. They help consumers ration a fixed income across the consumption of a wide range of goods by quantifying the opportunity cost of purchasing any particular good. They help allocate scarce resources by providing incentive to producers who can pay the most for the resources because they will produce the goods that will command the highest prices. They help producers choose between production processes by allowing the computation of cost schedules from production data. They reflect aggregate tastes and needs almost independently of the tastes and needs of any one citizen. But they do not necessarily imply the most appropriate distribution of income. Money prices cause wealth flows to the most heavily endowed, and that may or may not be the way things should be.

99. (C)

Over the course of 1981, this firm paid off $200,000 in liabilities with assets falling by $50,000. $100,000 in new stock was sold, which created additional assets and equity for the firm but no additional liability, so the $200,000 outflow was financed in part by the sale of $50,000 in assets and in part from the sale of $100,000 in stock. The extra $50,000 must have come from somewhere – it came from profits. Meanwhile, dividends of $50,000 were distributed out of profits, as well. Total profits, therefore, must have totaled $100,000.

100. (C)

Starting in equilibrium with $Y(-1) = Y^*$ and inflation equal to 0, the 20% works through the price adjustment equation to produce a 10% rate of inflation in the first year:

$$.9[0] + 0 + .5[.2] = .1.$$

The result is a 9% reduction in GNP relative to potential during the current year, i.e., year 1; from the policy response equation,

$$[Y-Y^*)/Y^*] = -.9(.1) = -.09.$$

Plugging this back into the price adjustment equation for year 2 with the price shock now zero, a 1.9% rate of inflation is expected:

$$.9[-.09] + .1 + .5[0] = .019.$$

The price level should therefore have climbed from 1 by 10% in the first year and another (compounded) 1.9% in the second; after two years its value should thus be

$$(1.1)\,(1.019) \times 1 = 1.12.$$

101. (B)

If an input can be used only in the production of a single good (e.g. X), then there is no opportunity cost of using it in the production of X; i.e. using more of it to produce X will not reduce the production level of any other commodity. The owner of this input must still be paid to supply it, but there is no cost to either the community or society as a whole.

102. (B)

In the past, dramatic increases in the international price of crude oil have resulted in large increases in the rate of inflation. In the short run this happens because energy consumption is a primary component of all price indices. Over the long run, higher energy costs translate into higher prices for almost every good whose manufacture and/or delivery involves energy. Since wages do not usually keep up with prices in periods of high inflation, the real wage should be expected to fall in these circumstances. A negative correlation between changes in the international price of crude oil and real wages should therefore be expected, and that expectation has been satisfied by experience over the past several decades of energy price volatility.

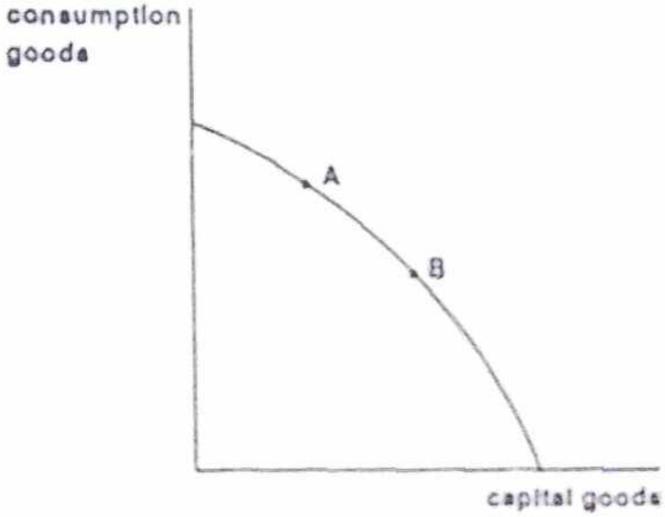


Figure 18

103. (E)

Investment in capital goods is deferred consumption that either (1) replaces depreciated capital to maintain productive capacity and thus maintain present consumption-investment possibilities or (2) enlarges the capital stock to increase productive capacity and thus increase future consumption-investment possibilities. Since the question stipulates that point A indicates enough capital formation to cover depreciation, it must be the latter; the entire production possibility frontier must shift out, indicating greater capacity to produce more consumption goods, more capital goods, or both.

104. (A)

Manufacturing costs are the costs of the goods actually produced in a given period of time. The manufacturing costs of the goods sold are equal to the cost of producing the goods that are actually sold. If manufacturing costs are less than the costs of producing the goods actually sold, then sales must have exceeded production. The firm must have eaten into its stock of inventories to sell, say, x% more than it produced. Clearly then, inventories at the beginning of the period must have been larger than inventories at the end of the period – answer (A) – regardless of the profit picture and independent of whatever level of dividends are distributed.

105. (C)

Appreciation of a currency against the dollar means that there exists excess demand for that currency (correspondingly, an excess supply of dollars). An infusion of supply of that country's currency or a reduction in dollars is therefore required to halt the appreciation of a currency against the dollar. This can be accomplished by expansionary monetary policy that uses domestic currency to purchase securities denominated in that currency. Such policy, because it requires that the central bank release domestic currency, increases the supply of that currency. Answer (A) is incorrect because this is an expansionary policy, not a contractionary one, although the purchase of dollar securities from the country whose currency is appreciating would increase the supply of that currency.

106. (A)

The tax will certainly not tend to push rents up. If anything, rents might fall because the demand for tobacco land might decline. Answer (E) is certainly wrong. The key here is that there are many alternative uses for the land. Owners of the land would therefore certainly not bear the full 50% burden of the tax because they could always find new tenants who would be willing to pay the original rent for some other use. So, answer (B) must also be wrong. So is answer (C), because the tax cannot be expected to lower the cost to the users of the tobacco land. Answer (D) assumes no tax wedge between the rent paid by the users and the rent received by the owners (because neither rent changes and they start equal); that cannot be correct either. The only possible answer, is (A), which would occur if there were many alternative uses for the land and if tobacco farming were only a small fraction of total demand. The owners could maintain the price that they received, and tobacco growers would have to pay that price plus the 50% tax – a 50% increase.

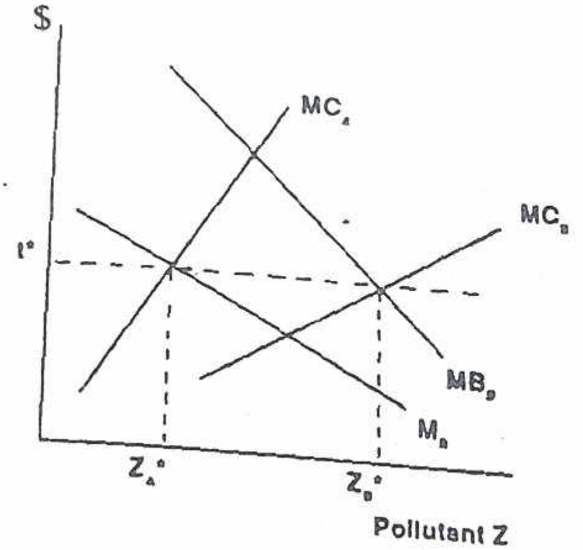


Figure A19

107. (C)

Figure A19 shows that Z_A* and Z_B* would maximize welfare in communities A and B, respectively. It is also clear that setting a uniform fine of t* would achieve both levels as firms in community A set MC_A equal to t* to choose Z_A* and firms in community B set MC_B equal to t* to choose Z_B*.

108. (C)

Equilibrium requires that investment equals savings – the sum of private saving (disposable income minus consumption), public saving (total government revenues minus expenditures) and foreign saving (imports minus exports). In this question, foreign saving increases by $1 billion and private saving is fixed. To maintain equilibrium, therefore, government saving must fall by $1 billion. Since a change in government saving can be accomplished only by changes in either government debt or the total money supply, this reduction in saving must be associated with an increase in bond holdings or money supply equal to $1 billion. Answer (A) shows a $2 billion increase in bonds and money; answer (E) a $2 billion reduction. Answer (B) shows no change in bonds plus money. Answer (D) shows a $1 billion reduction. Only (C) combines to yield the requisite $1 billion increase in bonds and money.

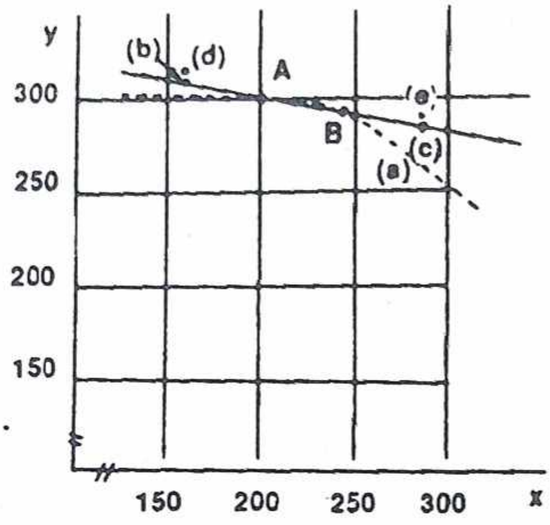


Figure A20

109. (A)

The "law of increasing relative costs" holds that increasingly large amounts of production of one good must be sacrificed for a series of equal increases in the production of another: the production possibility frontier must be convex. For values of X being produced between 200 units and 240 units, a third point illustrating the law of increasing relative costs must therefore lie above a line connecting the two given points – points A and B in Figure A 20. A convex frontier through points A and B is shown there by the dotted curved line. For values of X either less than 200 units or greater than 240 units, however, such a point must lie below the extension of the line AB. Identifying each answer by its letter on Figure A 20, it is clear that (1) all of the possible answers lie outside of the 200 to 240 unit range for which they would have to be above the line and (2) that only point (a) lies below the extension of line AB as required.

110. (D)

A constant exchange rate requires a constant interest rate set at the world rate to prevent currency flows into and out of the country that would put pressure on the exchange rate to move. If that is the case, then monetary policy must be set so that the internal interest rate is the same, regardless of the level of GNP (and thus transactions demand for money); the LM curve must, in other words, reflect a constant interest rate by being horizontal at the prescribed rate – the world rate.

111. (C)

After taxes, asset A pays \$7.50. The question refers directly to computing the percentage return [X x 100%] on the after (capital gains) tax proceeds of selling asset A that would pay the same after (personal income) tax \$7.50. Upon the sale of asset A, \$25 would have to be paid in capital gains tax. Given a 25% income tax rate, the equation that defines X is thus

$$.75 \times X \times \$125 = \$7.50;$$

and the solution is .08. Note that 8% > 6.67% generates what is known in the public fianance literature as the "locked-in" effect of capital gains taxation.

112. (C)

In long run equilibrium, investment must equal savings – the sum of private saving (disposable income minus consumption), public saving (government revenues minus expenditures = the negative of the federal deficit), and foreign saving (the negative of net exports). As a result, if foreign saving increases by \$200 billion because imports climb, then the sum of private and public saving must fall by \$200 billion to maintain a stable equilibrium. Only in answer (C) is that sum equal to the requisite \$200 billion reduction; private saving falls by \$100 billion and a corresponding increase in the deficit of \$100 billion means that public saving also falls by \$100 billion.

113. (B)

Notice that

$$[MP_A / MP_B] = [60/40] = 1.5 < 2 = [\$4/\$2] = [P_A/P_B].$$

where MPi and Pi is the marginal product and price per unit of input i, i = a or b.

Since the firm is not satisfying the least cost rule, it is not producing its output at minimum cost and so it cannot be maximizing profits. It could, in particular, always improve profits by producing the same level of output (and thus the same revenue) at a reduced cost.

114. (D)

Falling world prices, pressure the IS curve to shift in because net exports fall (domestic goods become relatively more expensive and imports relatively less expensive; exports fall and imports rise). To maintain output at its full potential, domestic prices fall in the classical model. To keep pressure off of the exchange rate, the reduction in prices must also be accompanied by a reduction in the money supply. So, the net effect is no change in either output or the interest rate. This can only be accommodated by no change in either the IS curve or the LM curve. Only Panel D shows this.

115. (C)

The answers relating to diminishing returns can be eliminated immediately because diminishing returns are measured by increasing the level of employment of one input while holding the employment of all of the other inputs constant; the question refers to doubling the employment of all inputs simultaneously. Constant returns to scale refer to the doubling of output when the employment of all of the inputs doubles; increasing returns to scale means that output increases by more than 100% if the employment of all of the inputs double. The question therefore contradicts the notion of constant returns to scale, but is a perfect illustration of the concept of increasing returns to scale. There is no "law of scarcity."

116. (E)

The idea is that uncertainty adds a risk premium to the investment decision that is not reflected in the marginal revenue product of capital. Since the nominal rate of interest can never be less than the return paid to holding currency (0%), the addition of this risk premium maintains a positive floor for the nominal rate that clears the market. It has no effect on the ability of the central bank to enact "tight" monetary policy, but it can work against the ability of the bank to enact "easy" monetary policy in extreme cases.

117. (C)

Given a classical economy, GNP is always at potential and so only prices adjust. To keep the exchange rate protected, those domestic prices must be set at the world level, expressed in terms of domestic currency through the exchange rate. Otherwise, domestic goods will be too inexpensive (or too expensive), exports (imports) will climb, and the currency will tend to appreciate (depreciate).

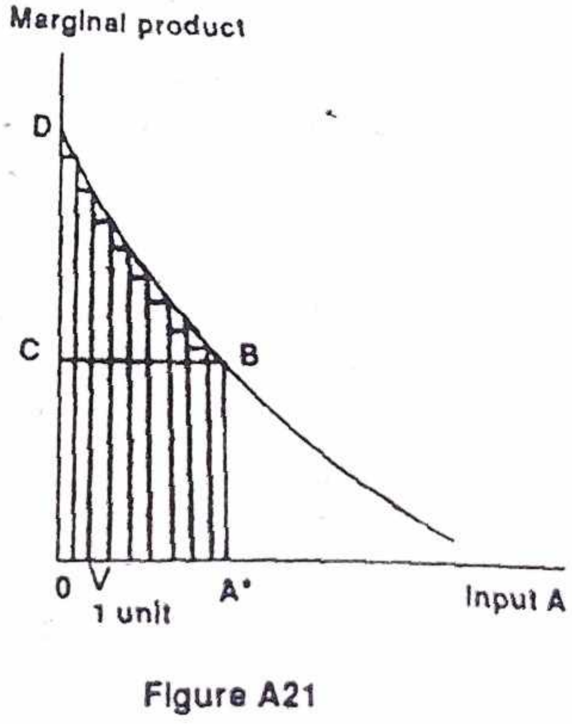


Figure A21

118. (B)

All of the statements are true but the second. To see why, recall that the marginal product of some input A is defined by

$$\text{marginal product of A} = \frac{\text{change in total product}}{\text{change in input A employment}}$$

assuming that the employment of all other inputs is held constant. It is, therefore, exactly what answer (E) claims it is; but it is also the partial derivative of the total product schedule [i.e., the slope of the total product curve as claimed in answer (C)]. Accordingly, the area under the marginal product curve from the origin to any given level of employment is the total product of that level [answer (D)]. On Figure A21, that is shown for A* as the shaded area. Since that area is approximated by the little rectangles drawn in the figure, it is also equal to the sum of all of the marginal product values for integer input levels from O to A* [each rectangle is one unit wide and MP(A) high; the area of each is thus MP(A) x 1 = MP(A)]. Answer (A) is thus also correct. The multiplication suggested by answer (B) is the area of the rectangle OA*BC = A* x MP(A*), and clearly does not match total product as claimed. Answer (B) is incorrect.

119. (E)

This is a question of definition. When economists speak of investment, they are talking about activity that adds the capital stock of an economy – additions to the economy's stock of (new) housing, factories, equipment, and inventories. It is generally not for current use, but it is a current flow of new assets that add to productive capacity.

120. (C)

This is a question about expectations. Investors will sell their fixed return securities if they think that interest rates will climb in the near future. To hold onto the securities would be to suffer capital losses as rates climb and the prices of securities fall; these losses can be avoided by selling quickly and holding cash. Increased liquidity also increases the investor's ability to take advantage of better investment opportunities when they occur in the future. If interest rates are expected to hold steady, then there is no reason to sell. If interest rates are expected to fall, selling would deny the investor the capital gain associated with the securities that he or she holds. Notice that only the last answer strays beyond the capital markets, but the likely response to unemployment is easy monetary policy that would lower rates.

121. (C)

You are looking for a policy that would serve as a contractionary policy for country B. Appreciation of A's currency would increase the demand for B's goods in country A; that would be expansionary. The opposite, depreciation of A's currency, would do the trick. Increasing the loans offered to B would be like expansionary monetary policy. A reduction in tariffs would again increase the demand for B's products within country A and thus be expansionary. Finally, higher prices for A's products would increase domestic demand within B for B's stuff. Only (C) suggests the appropriate contraction.

122. (E)

Satisfying the least cost rule means only that the firm has minimized the cost of producing whatever output it has selected. It has, in other words, thoroughly defined all of its cost schedules (including marginal cost) at least in the neighborhood of its chosen level of output because it has determined the most efficient means of producing that output. That output may or may not be the average cost minimizing output. It may or may not be the profit maximizing output. To maximize profits; it must do more than minimize cost; it must maximize the difference between total revenue and total cost. Minimizing costs is a necessary condition for maximizing profit, but it is not sufficient. Finally, the least cost rule does not require the nonsensical condition that marginal revenue be set equal to marginal product; it requires that the ratio of marginal product to price be equal for all inputs.

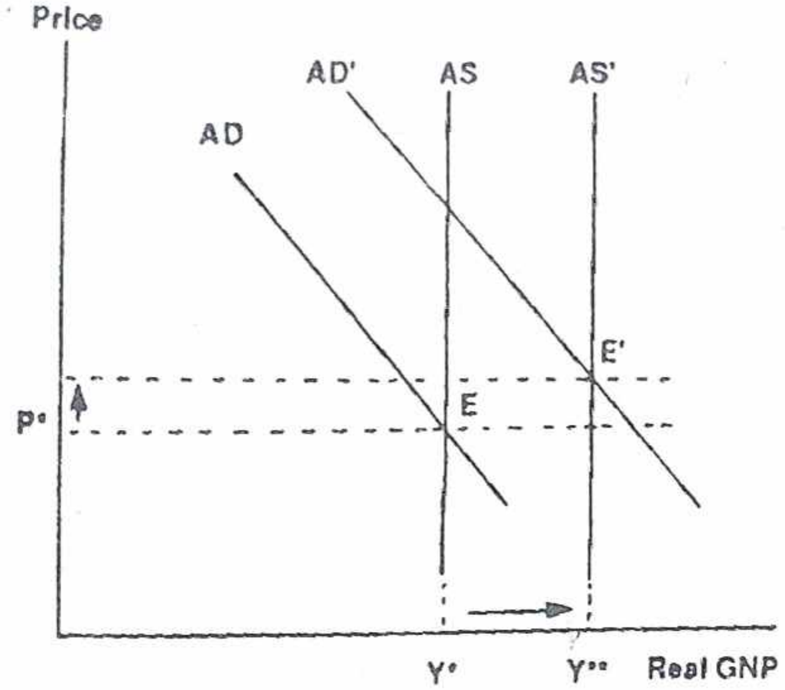


Figure A22

123. (E)

In a world of flexible prices that maintains full employment, real GNP will increase only if potential real GNP shifts upward; flexible prices imply that actual real GNP is defined by potential real GNP. If prices increase at the same time, aggregate demand must be climbing, as well, and at a faster pace so that scarcities resulting from potential increases in excess demand are eliminated by higher prices. To see this point geometrically, consult Figure A22. Note there is an initial equilibrium at E. If potential GNP climbs from AS to AS', then aggregate demand must intersect AS' above P* if prices are to climb along with actual real GNP; AD' reflects such an increase with new equilibrium appearing at E' with prices at P** > P* and real GNP at Y** > Y*.

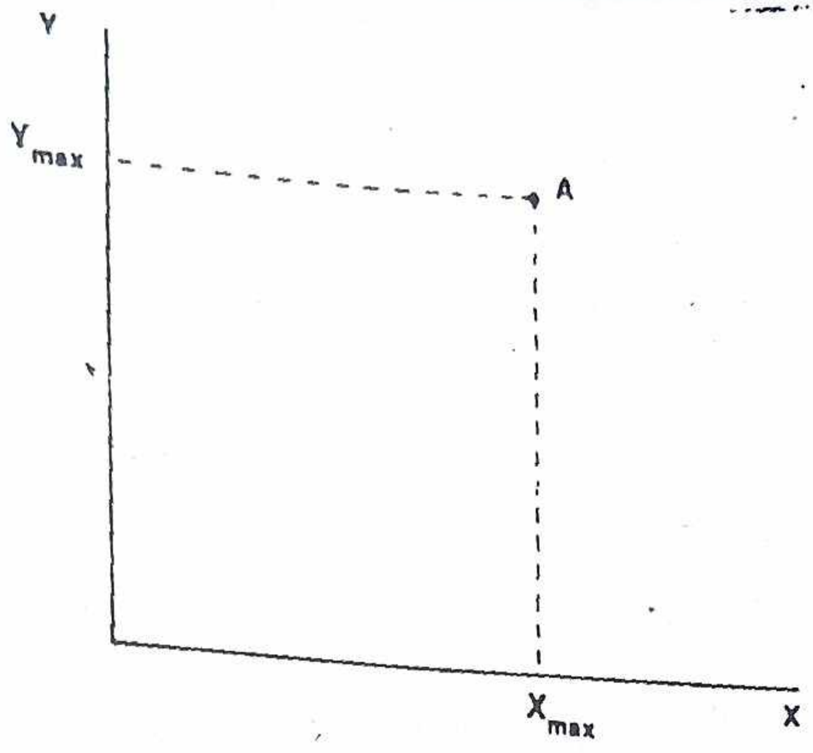


Figure A23

124. (B)

Consider a point of full employment with all of the inputs being used as efficiently as possible to produce either X or Y. The result is a well defined point like A on Figure A23. Inputs used in the production of X can only be used in the production of X; their full employment defines a maximum output of X, designated as X_{max} on the figure, that can be achieved regardless of the level of production in the Y-sector. Similarly, Y_{max} on the figure is independent of what goes on in the X-sector. Movement from point A along the production frontier is thus impossible because any release of inputs from the production of either good simply generates unemployment for those inputs and thereby violates the definition of a production frontier; the output of one good would simply fall without the usual economic justification – an increase in the production of the other.

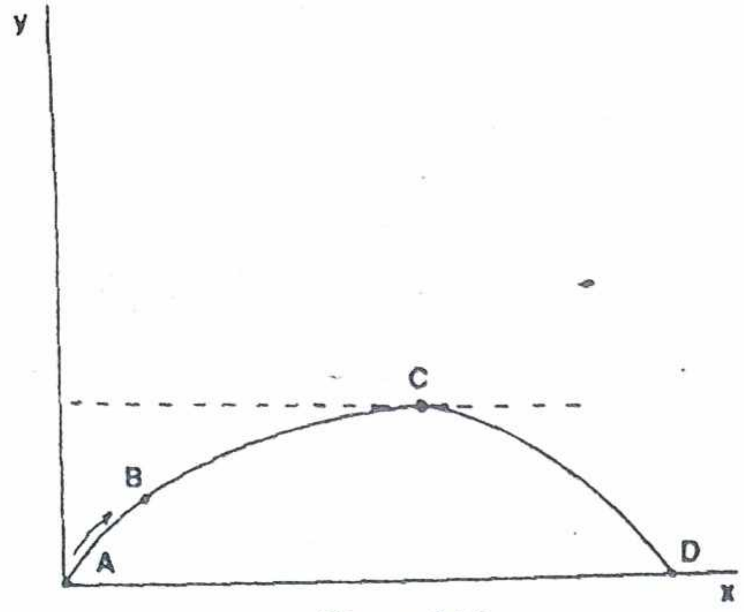


Figure A24

125. (E)

Consult Figure A24. Since X is an essential ingredient in the production of Y, there can be no production of Y without some production of X. Point A where X = Y = O must therefore be on the frontier with all of the "pure" inputs designated for use in the production of Y. As some of the inputs are designated for use in the production of X, the production of both X and Y can increase; thus, the movement up from the origin of Figure A24 to a point like B. Eventually, the proportion of "pure" inputs devoted to the production of X grows so large that the production of Y must begin to fall as the production of X continues to climb. This turnover point is illustrated by point C in the figure. In the extreme, when all of the inputs are devoted to the production of X, the production of Y again falls to zero at point D.

126. (A)

Let the price of output be $P_x = \$2$. The firm has set

$$P_x MP_A = \$2 \times 5 = \$10 = P_A,$$

where P_A is the price of input A and MP_A is its marginal product. Since the firm is a monopolist, the price of X is greater than marginal revenue. The firm has hired A past the profit maximizing point where the appropriate marginal revenue product equals P_A. The firm should, as a result, reduce its employment of A and, consequently, its production of X to improve profits.

127. (A)

The price level in equilibrium solves, in the first year, the equation of aggregate demand and aggregate supply at potential GNP; i.e., P*(1) satisfies

$$5500 = 4000 + [2000/P^*(1)],$$

so P* (1) = 1.33. In the next year, P*(2) solves

$$6000 = 4500 + [2000/P^*(2)],$$

and P*(2) = 1.33 again. The simultaneous growth in aggregate demand and potential GNP are thus in synch so that neither inflation nor deflation should be expected.

128. (E)

Of the cases indicated, only the last will have the entire tax borne by consumers; shift a supply curve against a vertical demand curve and the price changes by the full amount of the shift while the quantity demanded is fixed. In all of the other cases, quantity adjusts and moves the after-tax price received by suppliers down the supply curve; i.e. they pay at least part of the tax.

129. (D)

Marginal product is a *ceteris paribus* concept. It measures the change in output that occurs when the employment of one input is altered holding the employment of all other inputs fixed. Marginal product is usually assumed to be declining. Answers (C) and (D) are thus the possibilities. Only answer (D) notes the conditions that must be placed on the employment of inputs B and C for any judgement to be made about change in the marginal product of A; i.e. if the level of employment of B or C or both change with A, then all bets are off because the marginal product of A can increase, decrease, or stay the same.

130. (E)

Indifference curves are derived from an individual's utility function independent of either his or her income or the prices of goods. Individual utility for any given bundle of goods reflects the level of satisfaction that would be achieved if that bundle were consumed. It does not reflect how costly it was to acquire the bundle; nor does it reflect whether or not the individual could afford it. It measures only satisfaction once the bundle is "delivered," and it therefore depends only upon the tastes of the individual in question.

131. (B)

Evaluating aggregate demand with $P = 1.7$ yields

$$4000 + [2000/1.7] = 5176.$$

Since aggregate demand therefore falls short of potential GNP, there should be downward pressure exerted on prices. In a classical world, there would be an immediate reduction to 1.33. In a neoKeynesian world, prices might not respond immediately, but the pressure exerted by the marketplace would be nonetheless downward.

132. (C)

This answer follows directly from the definition of diminishing returns or diminishing marginal product. Returns attributed to one input are measured as output responses to changes in employment, *ceteris paribus* – all other things including the level of employment of all other inputs being held constant. It has nothing to do with the competence of inputs held later; it is a concept derived from the theory of production assuming perfectly homogeneous inputs. Proportional changes in all inputs are used to measure returns to scale. Answer (E) refers to the value of output which might decline, but for reasons of demand response and not for reasons of changes in input productivity.

133. (D)

When $[MP_i/P_i] = [MP_j/P_j]$ (where MP_i is marginal product of input i and Pi is going market price per unit of input i) for all inputs i and j, the firm is operating according to the least cost rule. It is minimizing cost, therefore, and it is operating along the cost curves defined by economic theory. Nothing can, however, be said about whether or not it is maximizing profit. For that to be discussed, information about the demand side of the market (price for a competitor or the effective demand schedule in the relevant region for an imperfect competitor) must be known.

134. (D)

Given a price of $4 for X and a maximum amount possibly purchased of 5 units, income must be $20. Since 5 units are also the maximum amount of Y that can be purchased, the price of Y must be [$20/5] = $4.

135. (E)

The substitution effect caused by the lapse of the provisions must cause substitution from risky assets to more certain assets. This would cause the risky assets certainty equivalent price to increase, and this substitution effect is perfectly clear (people substitute out of the more expensive goods, keeping everything else, including utility, held constant). Meanwhile, relative risk-aversion can also be defined in terms of the income effect. As real income falls (as would be the case if the loss-offset provisions were removed from the tax codes), individuals displaying increasing, constant, or decreasing relative risk-aversion will increase, stay the same, or decrease their risk-taking, respectively. In the last case, the income effect would amplify the substitution effect, and there would be an unambiguous reduction in risk taking. In the second case, the income effect would be neutral, and the substitution effect would still dominate, thus risk-taking behavior will also be reduced in the case. However, in the first case, increasing relative risk-aversion would work to increase risk-taking while the substitution will work to reduce it. Since there is no way of telling which effects dominates, the effect is ambiguous. Thus only (E) reflects each possibility.

GRE

ECONOMICS TEST

TEST II

THE GRE ECONOMICS
TEST II

TIME: 170 Minutes
135 Questions

DIRECTIONS: Choose the best answer for each question and mark the letter of your selection on the corresponding answer sheet.

1. A stable market equilibrium is a price-quantity pair

(A) at which quantity equals price

(B) to which the market will tend to return after a temporary stochastic disturbance

(C) at which total revenue achieves a local maximum

(D) at which the elasticities of supply and demand are both equal to unity

(E) for which there is no need for government intervention

2. Marshall's long-run equilibrium supply curve is

(A) steeper than his short-run supply curve

(B) flatter than his short-run supply curve

(C) the same as his short-run supply curve

(D) may be steeper or flatter than his short-run supply curve depending upon circumstances

(E) horizontal and fixed by assumption because Marshall worried most about the demand side of a market

3. Given a wage for labor and a planned level of output, an increase in the rental price of capital can be expected to

(A) increase the employment of both labor and capital

(B) increase the employment of capital but reduce the employment of labor

(C) increase the employment of labor but reduce the employment of capital

(D) reduce the employment of both capital and labor

(E) cause adjustments in the employment of capital and labor of indeterminate direction

4. The marginal benefit schedule for capital is downward sloping because

(A) it is the demand curve for capital, and all demand curves are downward sloping

(B) the marginal productivity of labor increases with the quantity of capital

(C) the level of output associated with any quantity of capital declines with the quantity of labor employed

(D) the marginal productivity of capital declines with the quantity of capital

(E) None of the above

5. When an allowance for depreciation is entered in the fixed asset section of a company's balance sheet, its purpose is

(A) to prevent an overstatement of net profit

(B) to reduce the original cost of some asset to an estimate of its true present value

(C) to assure that there will be sufficient cash on hand to replace assets as they wear out

(D) to record the money actually spent on maintenance during the period in question

(E) to record the total amount of money actually spent on new assets during the period in question

6. The term "rational expectations" is most accurately associated with the notion that

(A) economic policy is ineffective and should not be used in a discretionary way

(B) it is always possible to reduce inflation without recession by simply letting aggregate demand fall which it will do automatically

(C) tax adjustments will have no effect, but changes in the money supply can stimulate growth in an economy

(D) people always use as much information as possible in forming and acting upon their expectations of the future

(E) All of the above.

7. Consider a welfare program with a maximum possible benefit of $100.00 per month. Suppose that the program is constructed so that monetary benefits are reduced by $.50 for each dollar over $150 earned in any given month. An individual participating in the program and earning $200 each month therefore faces:

(A) an effective average tax rate of 50%

(B) an effective average tax rate of 16.7%

(C) an effective marginal tax rate of 200%

(D) an effective marginal tax rate of 50%

(E) an effective marginal tax rate of 12.5%

8. Suppose that the nominal GNP of an economy was $2 trillion in 1982 and $2.1 trillion in 1983. If the price index was 120 in 1982 and 126 in 1983, then real GNP

(A) rose by 5% from 1982 to 1983

(B) fell by 5% from 1982 to 1983

(C) held constant from 1982 to 1983

(D) rose slightly from 1982 to 1983 because of lags between quantity changes and price adjustments

(E) may not have changed from 1982 to 1983, if the level of employment was constant

9. The harder the monetary authorities apply the brakes of restrictive monetary policy in an attempt to reduce an excessive rate of inflation,

(A) the smaller will be the resulting gap between actual and potential GNP in the short run.

(B) the tighter will be the spiral of recovery in the longer run.

(C) the wider will be the spiral of recovery in the longer run.

(D) the tighter will be the spiral of recovery, but new equilibrium will be defined by lower anticipated inflation.

(E) the wider will be the spiral of recovery, but new equilibrium will be declined by higher anticipated inflation.

10. If prices were completely flexible and international conditions caused aggregate demand to increase at every price level, then

(A) prices and GNP would climb

(B) prices would climb and GNP would fall

(C) prices would climb but GNP would remain below its potential

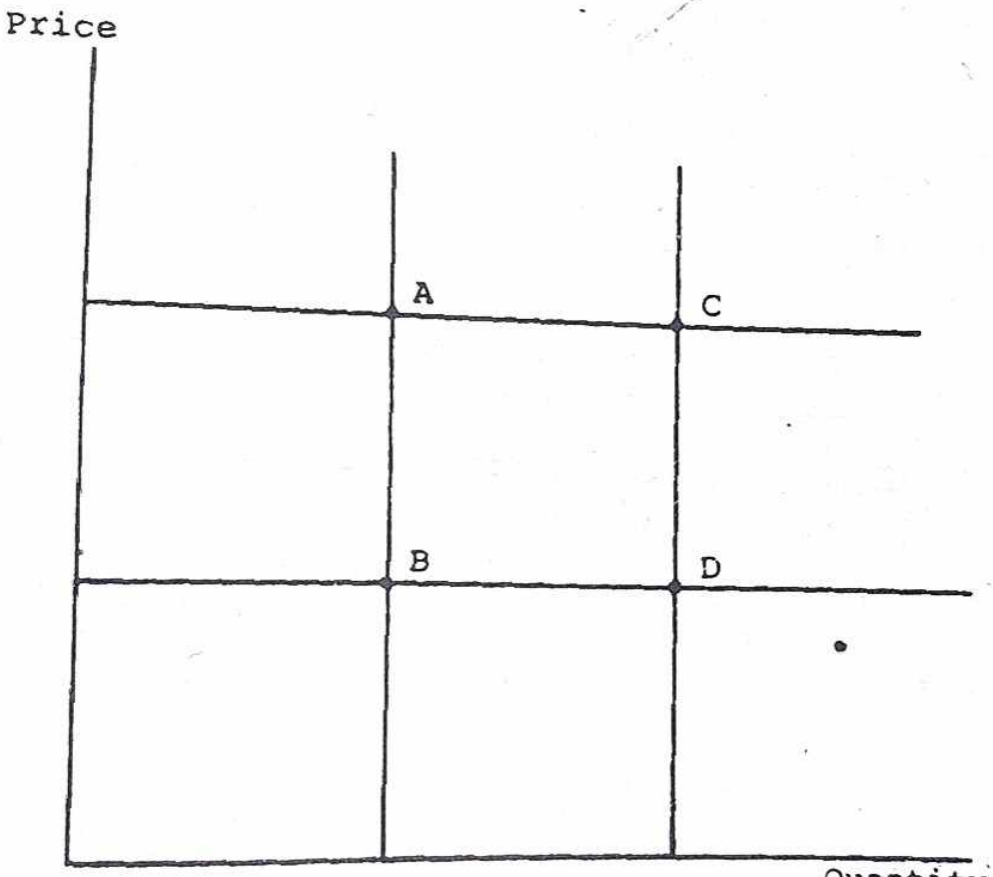
(D) prices would fall and GNP would remain at its potential

(E) prices would climb to maintain GNP at its potential

11. If a perfectly competitive industry is in long-run equilibrium, all firms will

(A) have equal marginal costs
(B) have identical supply curves
(C) operate at the point where marginal cost just covers all variable costs
(D) have identical plant sizes
(E) have equal fixed costs

Questions 12 and 13 relate to the figure below. The four labeled points represent market equilibria for four separate periods of time. Assume that underlying demand and supply schedules have the usual shapes with intermediate price elasticities.



12. If points A, B, C, and D represent market equilibria for four different time periods, which of the following is true?

(A) A single supply curve can be estimated from the recorded equilibrium points.

(B) A single demand curve can be estimated from the recorded equilibrium points.

(C) The equilibrium points could be supported by two distinct demand curves and two distinct supply curves.

(D) The equilibrium points could be supported by three distinct demand curves and two distinct supply curves.

(E) The equilibrium points could be supported by three distinct demand curves and three distinct supply curves.

13. A shift in equilibrium from point A to point D could be explained by

(A) an increase in demand against a fixed, totally inelastic supply curve

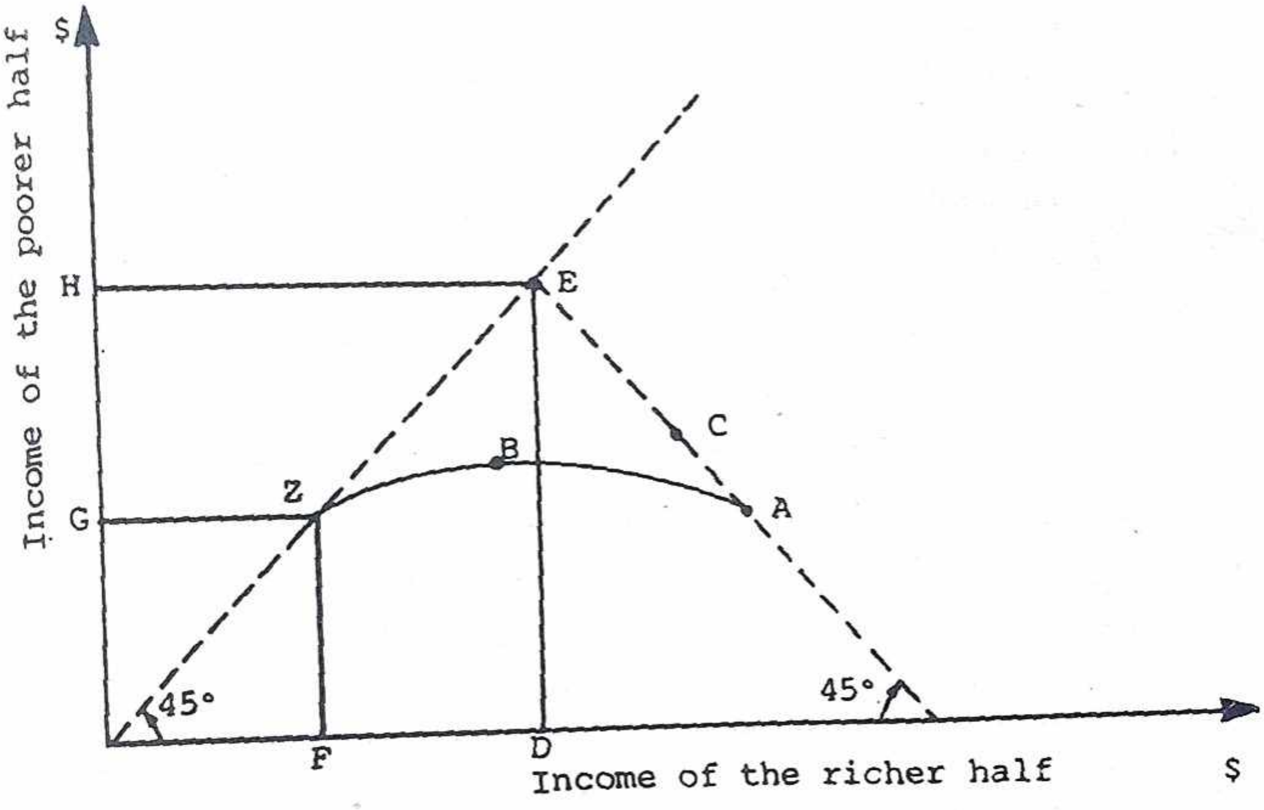
(B) an increase in demand against a fixed, but somewhat price elastic supply curve

(C) an increase in supply against the assumed, somewhat price elastic demand curve

(D) a reduction in supply against the assumed, somewhat price elastic demand curve

(E) a reduction in demand against a nearly perfectly elastic supply

Use the figure below to answer Questions 14 and 15. Point A represents the present distribution of income between the lower income citizens and the higher income citizens. Suppose that there is an equal number of each type.



$
Income of the poorer half
H
G
E
C
B
Z
A
45°
45°
F
D
Income of the richer half
$

14. A social policy maker seeking to maximize a Rawlsian social objective function, would strive to achieve an income distribution illustrated by

(A) Point A
(B) Point B
(C) Point C
(D) Point D
(E) Point E

Suppose that there are only 2 people in the economy reflected in the figure above - one rich and one poor. The deadweight loss, measured in terms of income, of achieving income equality would be:

(A) length FD

(B) length GH

(C) length FD plus length GH

(D) length EZ

(E) two times length EZ

16. Keynes' view that investment drives an economy and makes it vulnerable to the capricious effects of speculative expectations

(A) accurately describes recent experience in the United States

(B) is a bit overstated in the light of investment's general correlation with real GNP and the forward looking construction of business and consumption expectations

(C) might be correct unless consumption expectations are different from business expectations

(D) is not at all correct given the relative stability of the investment component of aggregate demand

(E) is entirely false when one corrects for the effect of changes in the rental price of capital

17. One reason that has been proposed to explain why housing is a leading indicator of economic activity is that

(A) the demand for housing depends upon real GNP, and declines in real GNP always precede the onset of recession

(B) the demand for housing depends upon the real interest rate, and real interest rates generally climb as economies begin to turn down into recession

(C) the demand for housing depends at least indirectly on the prices of construction materials, and those prices always accelerate during the inflationary booms that precede recessions

(D) the [illegible]mand for housing depends critically upon nominal GNP, which always falls during the inflation that precedes recession

(E) the demand for housing is affected by changes in real GNP abroad - one harbinger of changes in domestic activity.

18. Consider an economy operating initially at its full potential. A subsequent reduction in aggregate demand at every price level would, according to the sticky price adjustment model, cause

(A) an increase in the unemployment rate

(B) a contraction in the capital stock

(C) a reduction in the level of potential GNP

(D) upward pressure on wages and prices

(E) only a reduction in prices

19. A growth recession occurs when aggregate demand is not growing sufficiently to keep pace with the growth of potential GNP (mostly the result of people entering the labor force). Consider an economy initially at equilibrium at its \$3000 potential with aggregate demand specified by 3300-3P. Let potential GNP grow by 2% and aggregate demand climb to Y = 3300-3P. Then

(A) a sticky price model would predict GNP \$30 short of potential

(B) a sticky price model would predict unemployment

(C) a sticky price model would feel downward pressure on prices in the long run

(D) a flexible price model would predict full employment and deflation of exactly 10%

(E) All of the above

20. Let the price elasticity of demand for some good be 1. Assuming some price elasticity of supply, any excise tax imposed on the sale of such a good must be

(A) borne entirely by the seller

(B) borne entirely by the buyer

(C) shared 50-50 by both the buyer and the seller

(D) shared to an unspecified degree by both the buyer and the seller

(E) sufficient to cause the market to collapse

21. Let there be two goods, X and Y. For individual A, the marginal utility of X is 2, while the marginal utility of Y is 1. If the prices of X and Y were both equal to $10, then individual A could improve his welfare (even without an infusion of extra income) by

(A) consuming more X, even at the expense of consuming less Y

(B) consuming more Y, even at the expense of consuming less X

(C) consuming more X only if consumption of Y could be maintained at the original level

(D) consuming less X, but only if consumption of Y could be maintained at the original level

(E) maintaining the current consumption pattern

22. Starting with national income, which of the following procedures is included in the process that produces a value for disposable personal income?

(A) Subtracting excise and sales taxes

(B) Subtracting nonbusiness interest

(C) Subtracting transfer payments from government

(D) Subtracting income taxes

(E) Adding contributions for social insurance that will eventually be repaid

23. A current account deficit

(A) is never possible because the balance of payments must always balance

(B) can seldom be larger than 50% of a capital account surplus

(C) can be used to help finance a government deficit indefinitely

(D) can be used to help finance a government deficit if foreign lenders accumulate government bonds

(E) does not include investment earnings that are part of the capital account

24. Of the three major components of investment,

(A) nonresidential fixed investment dominates, but inventory volatility gives inventory a primary role in driving the business cycle

(B) residential fixed investment dominates and therefore plays a primary role in driving the business cycle

(C) inventory holdings dominate, but the volatility of nonresidential fixed investment is a primary source of business cycle fluctuation in GNP

(D) only residential fixed investment depends on real GNP and thus has anything to do with the business cycle

(E) None of the above

25. Capital budgeting and rental approaches to capital employment decisions both agree that

(A) capital should be "hired" under imperfect competition as long as the marginal benefit of capital is climbing to its rental price

(B) capital should be "hired" under perfect competition as long as the marginal benefit of capital is climbing to its rental price

(C) capital should be "hired" as long as the marginal benefit of capital is climbing to its rental price, regardless of market structure

(D) capital should be "laid-off" as long as the marginal benefit of capital is falling to its rental price, even under imperfect competition.

(E) None of the above

26. If average variable cost is less than marginal cost, then certainly

(A) per unit total cost is rising

(B) per unit total cost is constant

(C) per unit total cost is falling

(D) per unit variable cost is falling

(E) per unit variable cost is rising

27. Which of the following most accurately describes financial liability in the event of a successfully prosecuted criminal case against a company?

(A) Partners and corporate executives can go to jail, but shareholders or bondholders cannot.

(B) Partners can go to jail, but corporate executives, shareholders, and bondholders cannot.

(C) Active partners can go to jail, but silent partners, shareholders, and bondholders cannot.

(D) Partners, shareholders, and corporate executives can go to jail, but bondholders cannot.

(E) Partners and shareholders can go to jail, but corporate executives can only be fired.

28. Suppose that a company made $40,000 worth of toys from $1,000 in steel, $5,000 in energy and other material, and $10,000 in plastic. Let its wage bill be $10,000, its rent be $5,000, and its profit to be $9,000. Its value added would be

(A) zero

(B) $9,000

(C) $14,000

(D) $24,000

(E) $16,000

29. In 1984, contributions for social insurance amounted to almost $306 billion, corporate retained earnings equalled $207 billion, nonbusiness interest swelled to $150 billion, transfer payments reached almost $417 billion, and income taxes raised just over $435 billion. Given this information, which of the following statements is an accurate ranking of national income (NI), personal income (PI), and disposable personal income (DI)?

(A) NI>PI>DI

(B) PI>NI>DI

(C) PI>DI>NI

(D) NI>DI>PI

(E) Cannot tell from the information provided

30. Suppose that the desired capital stock is always equal to 3 times total output for any year. In that case, the accelerator principle would imply that investment should always

(A) equal some constant multiple greater than 3 times the annual change in GNP to accommodate depreciation

(B) be precisely equal to 3 times the annual change in GNP regardless of the rate of depreciation

(C) equal some constant multiple less than 3 times the annual change in GNP to accommodate depreciation

(D) be proportional to the annual change in GNP, but the information provided is insufficient to compute the multiple exactly.

(E) None of the above

31. Excluding the inventory component, which of the following statements is accurate?

(A) Gross investment must be nonnegative, but net investment must be negative if the desired level of capital is smaller than last year's capital stock.

(B) Gross investment can be either positive or negative, but net investment must be negative as long as the desired level of capital is smaller than last year's capital stock.

(C) Gross investment must be nonnegative, but net investment can be negative or positive if the desired level of capital is smaller than last year's capital stock

(D) Gross investment must be nonnegative because net investment must always be positive

(E) None of the above

Questions 32 and 33 refer to a production process described by the following table.

Unit of output	Cost of that unit
1st	$44
2nd	$35
3rd	$24
4th	$23
5th	$24
6th	$30
7th	$37
8th	$47

32. Given the cost data indicated in the table above, the average variable cost of producing 7 units of output is

(A) $37

(B) $29

(C) $31

(D) greater than $37

(E) impossible to calculate from the information provided

33. Given the cost information provided in the table above, the minimum of the average cost curve occurs at

(A) 4 units of output

(B) 5 units of output

(C) 6 units of output

(D) 7 units of output

(E) more than 8 units of output

34. Assuming that nothing else changes, an increase in exports of $5 billion can

(A) allow both the money supply and bond issues to fall by $5 billion

(B) allow bond issues or the money supply to fall by $5 billion

(C) allow both the money supply and bond issues to fall by more than $2.5 billion

(D) allow bond issues or the money supply to increase by $2.5 billion

(E) allow bond issues to fall by more than the money supply increase of $5 billion

35. If the producer price index climbed dramatically in February and March of 1987, we should expect

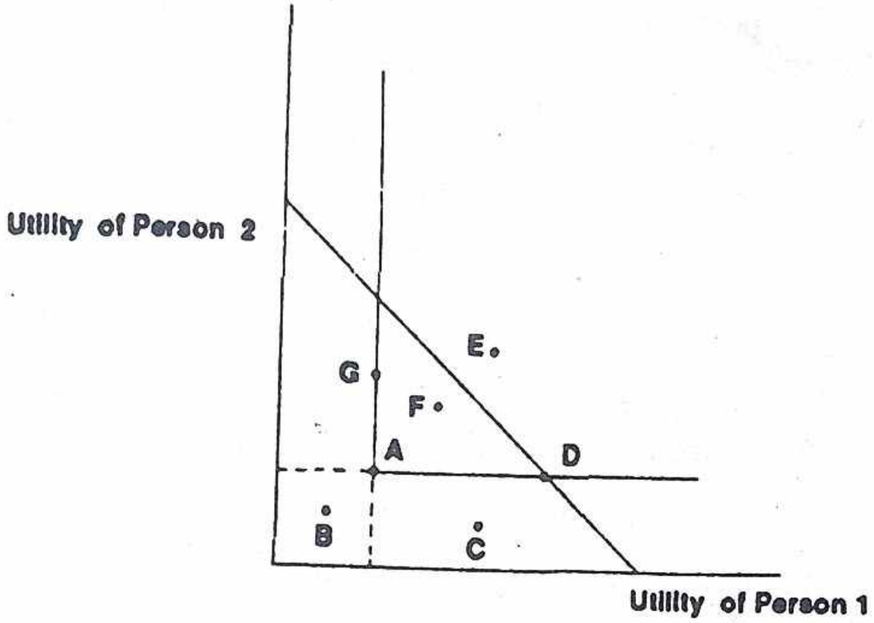
(A) lower inflation measured by the consumer price index in April and May

(B) lower producer price inflation in April and May as the series "regresses toward the mean"

(C) higher inflation measured by the consumer price index sometime in the near future, perhaps as early as May or June

(D) even more rapid producer price inflation in the future as real wages try to keep up with the March number through cost of living adjustments

(E) None of the above



36. Consider the two person economy characterized by the utility possibility frontier drawn in the figure provided above. Which of the following is the largest set containing only feasible points that would be Pareto improvements over point A?

(A) Points B, C, and G

(B) Points E and F

(C) Points D, F, and G

(D) Points D, E, F, and G

(E) Point F only

37. Suppose that the market value of many firms exceeded the prices of their existing capital stocks even though the rental price of capital had been driven up by an increase in real interest rates. In these circumstances, you would expect to see

(A) zero net investment, with gross investment simply matching depreciation

(B) negative net investment, with gross investment falling short of depreciation to let the capital stock shrink to a new, lower desired level

(C) negative gross and net investment signaling a catastrophic reduction in the capital stock to a new, much lower level

(D) positive net investment so that the capital stock might climb to a new, higher desired level

(E) negative gross and net investment arranged so that the capital stock might climb to a new, higher level

38. If, at 20 units of output, marginal cost exceeds average cost, then competitive equilibrium could lead the firm to produce

(A) more than 20 units

(B) exactly 20 units

(C) less than 20 units

(D) more or less than 20 units depending upon the number of firms in the industry in long run equilibrium

(E) an indefinite number of units because the firm displays constant returns to scale

39. A model that envisions perfectly flexible prices can explain

recession only in terms of

(A) increases in aggregate demand

(B) decreases in aggregate demand

(C) increases in the number of people looking for work without a corresponding increase in the number of jobs

(D) sudden surges in investment that cause the capital stock to increase too quickly

(E) None of the above

40. Suppose that the natural rate of unemployment in the United States for the early 1980's was 6%. If the actual unemployment rates for 1981, 1982, 1983, and 1984 were rounded off to equal 7.5%, 9.5%, 8.5%, and 7.5%, then the total real cost of the recession that reduced inflation to roughly 5% was

(A) less than 5% of potential GNP in total over the 4 years

(B) more than 10% of potential GNP for each of the 4 years

(C) approximately 27% of potential GNP in total over the 4 years

(D) something less than 1% of actual GNP for each of the 4 years

(E) approximately 22% of actual GNP in total over the 4 years

41. If the share of real GNP paid to labor in the United States has been roughly 75% over the past 50 years, then

(A) the real source of increase in the real wage has been productivity growth

(B) the real source of inflation has been wage settlement

(C) the real source of international trade instability has not been excessive wages in the United States

(D) real wages must have soared in the 1970's

(E) the real return to capital must have increased

42. The income tax system of the United States can work to discourage investment. This tendency can, however, be offset by the stimulative effects of

(A) increasing the tax credit percentage that firms can subtract from their tax liabilities

(B) allowing interest payments to be deducted from income before tax liability is computed

(C) allowing depreciation to be deducted more quickly from income before tax liability is computed

(D) lowering the real rate of interest through macroeconomic policy

(E) All of the above

43. In 1984, United States inventories amounted to

(A) 40% of GNP – about 5 months of annual production

(B) 40% of the manufacturing and trade component of GNP – about 5 months of annual production

(C) 40% of total annual depreciation expenses

(D) less than 10% of the size of the federal budget deficit and thus contributed little to the absorption of private saving

(E) more than 40% of GNP – more than 5 months of annual production

44. In a competitive market with a downward sloping demand curve, a tax that increases the fixed cost of every firm will

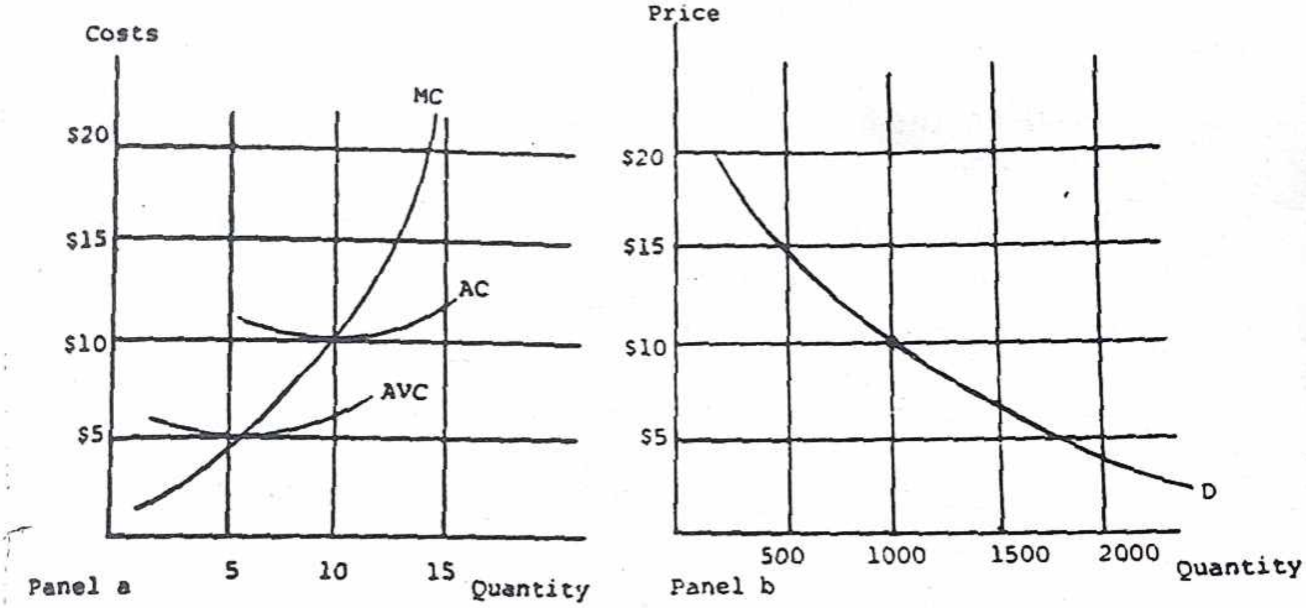
(A) reduce the number of firms supporting long run equilibrium

(B) reduce the long run equilibrium price

(C) not cause the number of firms supporting long run equilibrium to change

(D) increase the number of firms supporting long run equilibrium

(E) not cause the long run equilibrium price to change because marginal costs do not change when fixed costs increase



45. Suppose that all the firms in a given market can be characterized by the cost structure illustrated in Panel a of the figure above. If market demand is as indicated in Panel b, the number of firms required to support long run equilibrium is

(A) 90

(B) 100

(C) 110

(D) 120

(E) Some number greater than 50 that cannot be determined

46. Suppose that the number of people employed in an economy falls by 0.1% over the course of a single month. It is, in such a circumstance,

(A) possible for the unemployment rate to fall if enough unemployed workers become too discouraged to look for a job

(B) possible for the unemployment rate to remain constant if the frictional component falls

(C) impossible for the unemployment rate to do anything but fall

(D) impossible for the unemployment rate to do anything but rise

(E) possible for the unemployment rate to remain constant if the cyclical component falls

47. Slack exists even in a vigorous United States economy because

(A) the average capacity utilization rate is 92% when the 6% natural rate of unemployment is achieved

(B). the average capacity utilization rate is 86% when the 2% natural rate of unemployment is achieved

(C) the average capacity utilization rate is 86% when the 6% natural rate of unemployment is achieved

(D) the average capacity utilization rate is 86% and the natural rate of unemployment is roughly 6%

(E) even though full employment corresponds to a low 4%, the average capacity utilization rate is only 86%

48. Consider a simple economy in which consumption is $C = -100 + .8(1-t)Y$. Let the tax rate $t = .2$, let $I = 200$, and assume an active government so that $G = 800$. If the government were to balance its budget in equilibrium by increasing the tax rate and decreasing its spending, then

(A) GNP would climb above $2500

(B) GNP would remain at $250

(C) GNP would fall below $2500

(D) GNP might rise or fall depending upon which policy was stronger

(E) consumption expenditure would either rise or fall depending upon whether or not the tax increase dominated the effect of climbing GNP

49. Investment is generally sensitive to changes in the real interest rate because

(A) all three of the components of investment are sensitive to the interest rate

(B) nonresidential investment increases as the interest rate climbs because the higher rental price of capital inspires substitution into the relatively less expensive employment of labor

(C) residential investment increases as the interest rate climbs because the interest rate is a major component of the rental price of housing

(D) inventories climb as the interest rate climbs because the interest rate is a major component of the holding cost of inventories

(E) investors' expectations are irrationally linked to price inflation and thus to the real interest rate

50. The paradox of saving

(A) is a concern of all macroeconomists

(B) is a concern of the Keynesian economists that is diminished only if investment is positively correlated with GNP

(C) is not a concern of the new classical economists because of their belief that price adjustments always maintain actual GNP at its potential

(D) is really a fallacy of logic because higher saving produces higher investment which produces greater aggregate demand and faster growth

(E) was a concern, historically, but has been rendered obsolete by interest rate indexing to price inflation

51. The supply curve for a monopolist is always

(A) more elastic than the supply curve for a perfect competitor

(B) less elastic than the supply curve for a perfect competitor

(C) more elastic than the market supply curve for a perfectly competitive industry

(D) steeper than the monopolist's average cost curve in the relevant region

(E) undefined because the price-output decision of a monopolist depends upon market demand

52. The major source of revenue for the United States government is

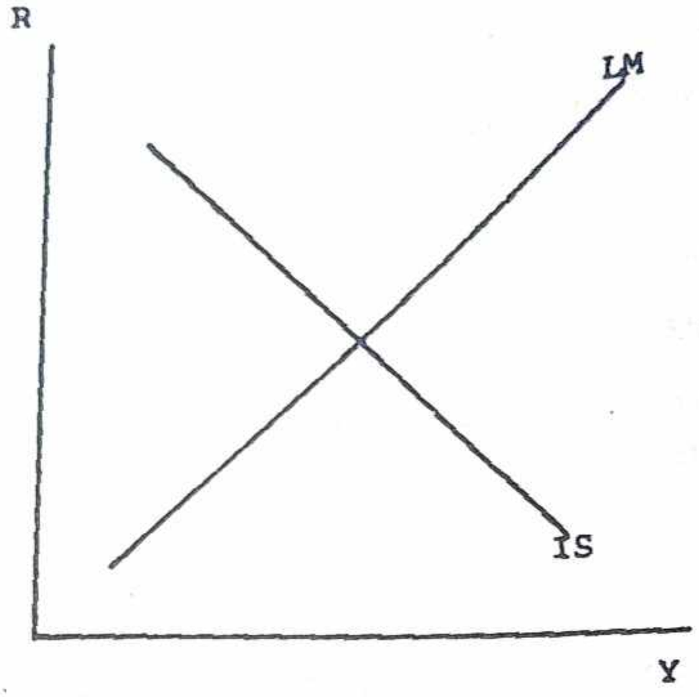
(A) the collection of property taxes

(B) the collection of the corporate income tax

(C) the collection of excise taxes on liquor, gasoline, cigarettes, and tires

(D) the collection of import and export duties in the conduct of foreign trade

(E) the personal income tax



Use the figure above to answer Questions 53 and 54. The usual IS and LM schedules are represented.

53. Given the IS-LM construction illustrated in the figure above, an increase in government spending can be expected to

(A) increase both interest rates and GNP

(B) reduce both interest rates and GNP

(C) reduce GNP and increase interest rates

(D) increase GNP but cause an indeterminate, ambiguous effect on interest rates

(E) increase interest rates, but cause an indeterminate, ambiguous effect on GNP

54. Given the IS-LM construction of the figure above, an unexpected increase in the price level, in the absence of any policy adjustment, will

(A) increase both interest rates and GNP

(B) reduce both interest rates and GNP

(C) increase GNP but cause interest rates to fall

(D) increase interest rates but cause GNP to fall

(E) increase interest rates but cause an indeterminate, ambiguous effect on GNP

55. Which of the following taxes, as structured in the United States, is the best example of ability-to-pay taxation?

(A) The federal excise tax on cigarettes

(B) The federal corporate income tax

(C) A state imposed highway user tax

(D) A proportional state sales tax

(E) The federal personal income tax

56. The most critical parameter in evaluating the potential social cost of imperfect competition is

(A) the number of firms serving a given market

(B) the size of total output

(C) the price elasticity of market demand

(D) the relative sizes of the firms serving a given market

(E) the income elasticity of demand

57. Which of the following does not represent a barrier to entry into a market?

(A) Import quotas

(B) Patent laws

(C) Government franchises

(D) Anti-trust legislation

(E) Environmental regulation imposed upon all producers in a given industry

58. Net exports for the United States

(A) were consistently negative for the three decades prior to 1981, but have since turned dramatically positive; as a result, the United States became a net debtor nation in 1985

(B) were consistently positive for the three decades prior to 1981, but have since turned slightly negative

(C) were consistently positive for the three decades prior to 1981, but have since turned dramatically negative; as a result, the United States became a net creditor in 1985

(D) were consistently positive for the three decades prior to 1981, but have since been fluctuating up and down around zero

(E) None of the above

59. The relative prices of American goods sold in Europe can change from day to day, even though domestic prices for the same goods in the United States are fixed in the short run because

(A) the prices of European goods sold at home are not fixed in the short run

(B) the nominal rate, not the real exchange rate, can move in the very short run

(C) both the real and the nominal exchange rates can move in the very short run

(D) the theory that assumes that prices are fixed in the short run is fallacious

(E) speculations in commodity markets hedge against exchange rate fluctuation

60. A logical extension of the Phillips curve relationship between inflation and the difference between actual and potential GNP is that

(A) the inflation rate and the unemployment rate should be positively related

(B) the inflation rate and the natural rate of unemployment should be positively correlated

(C) the inflation rate and the unemployment rate should be negatively correlated

(D) the inflation rate and the natural rate of unemployment should be negatively correlated

(E) the difference between actual and potential GNP should be negatively correlated with the difference between actual and full employment

61. The privatization of anti-trust enforcement has resulted in

(A) an increase in anti-trust cases

(B) a decrease in damages awarded in anti-trust cases

(C) a tendency for firms to practice collusive behavior rather than engage in mergers

(D) increased government subsidization of regulated monopolies

(E) too many large mergers

62. Let the natural rate of unemployment equal 6%. Suppose that the expectations-augmented Phillips curve was operable with the expected rate of inflation equaling last year's rate, and let each 3 point reduction in GNP below potential, lower inflation by 1 point. Reducing inflation from 10% to 8% in one year would then require

(A) unemployment to run around 6% for the entire year

(B) unemployment to run around 7% for the entire year

(C) unemployment to run around 8% for the entire year

(D) unemployment to run around 9% for the entire year

(E) unemployment to run in excess of 10% for an entire year

63. Suppose that (1) the dollar depreciated; (2) domestic prices in the United States rose, and (3) real income in the United States rose too. You would expect net exports to

(A) fall because each of these events tends to push net exports down

(B) rise because each of these events tends to push net exports down

(C) it would probably fall, but you would be unsure because the depreciation of the dollar would tend to push exports up even as imports rose in response to domestic inflation and real GNP.

(D it would probably rise, but you would be unsure because domestic inflation would tend to depress exports even as imports fell in response to the depreciation and income effects

(E) be unaffected unless the dollar depreciation was orders of magnitude larger than domestic inflation

64. Suppose that an economy is based in part on a Phillips curve relationship that did not include an expectations term. Furthermore, suppose that the unemployment rate in 1985 falls 1 point below the natural rate before returning to the natural rate for the rest of the decade. If the coefficient relating the percentage GNP gap and inflation is 0.4, then you would predict

(A) a perpetual increase in the rate of inflation equal to 1.2 points

(B) a one-shot increase in the rate of inflation for the year 1985, equal to 1.2 points

(C) a perpetual increase in the rate of inflation equal to 0.4 points

(D) a one-shot increase in the rate of inflation for the year 1985, equal to 0.4 points

(E) a perpetual increase in the rate of inflation equal to 1.0 point

65. Suppose that a permanent reduction in export demand were matched exactly in its first year by increasing government spending. Compared with the long term outcome that you would expect in the absence of this policy adjustment, you would now expect to see

(A) the same downward price adjustment to accommodate lower demand postponed by one year

(B) the same downward price adjustment to accommodate lower demand that was unaffected by neutral fiscal policy and still oprates along the same time schedule.

(C) the same upward price adjustment to accommodate lower demand postponed one year

(D) the same upward price adjustment operating along the same time schedule

(E) none of the above

66. The present value of $1000 payable in one year with a market rate of interest of 11% is approximately equal to

(A) $9000

(B) $1110

(C) $1000

(D) $900

(E) $110

For Questions 67 through 69, assume that the production of some good Y is completely specified in terms of capital (K) and labor (L) according to

$$Y = a\,[bK^r + (1-b)L^r]^{1/r}$$

Notice that this form is the general CES production function with only two inputs specified.

67. If the production function given above was specified as r converging to 0, then the share of output devoted to paying labor as the real wage increased for a given price of capital would

(A) increase even without technologically induced increases in labor productivity

(B) stay fixed even without technologically induced increases in labor productivity

(C) decrease unless accompanied by significant technologically induced increases in labor productivity

(D) decrease unless something intervened to cause the rental price of capital to fall

(E) stay fixed if labor employment were allowed to increase spontaneously

68. For given wage and rental rates, the long run cost function associated with the production function specified above

(A) increases with output at an increasing rate

(B) increases with output initially at a decreasing rate, but eventually at an increasing rate as returns to scale are played out

(C) increases with output at a constant rate

(D) increases on the average with output at a constant rate

(E) decreases with output initially at a decreasing rate until it eventually turns up

9. Let the parameter r converge toward unity in the production function provided above. Which panel in the figure below corresponds to the isoquants that would result?

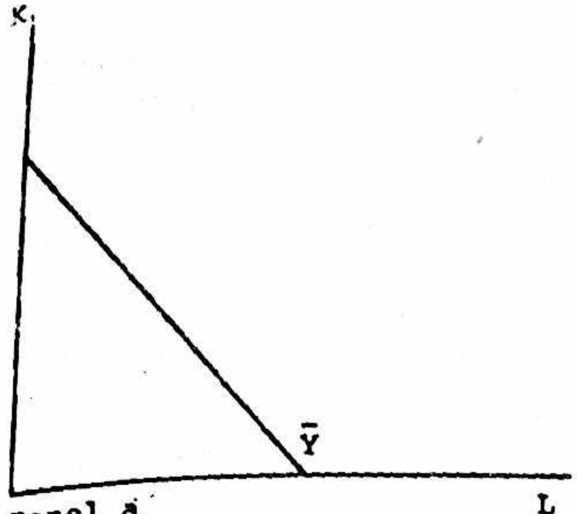
(A) Panel a

(B) Panel b

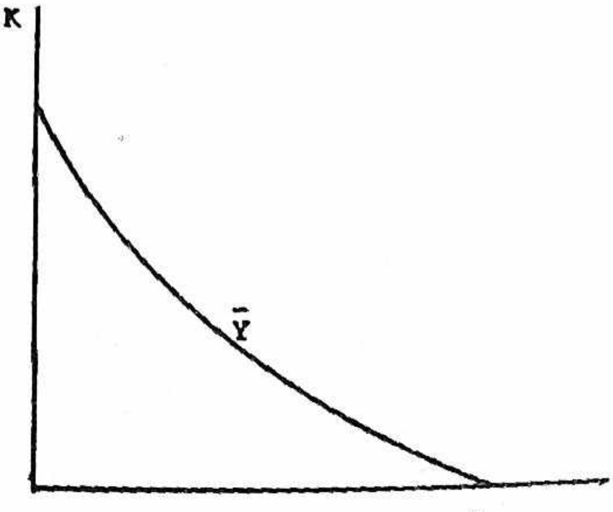
(C) Panel c

(D) Panel d

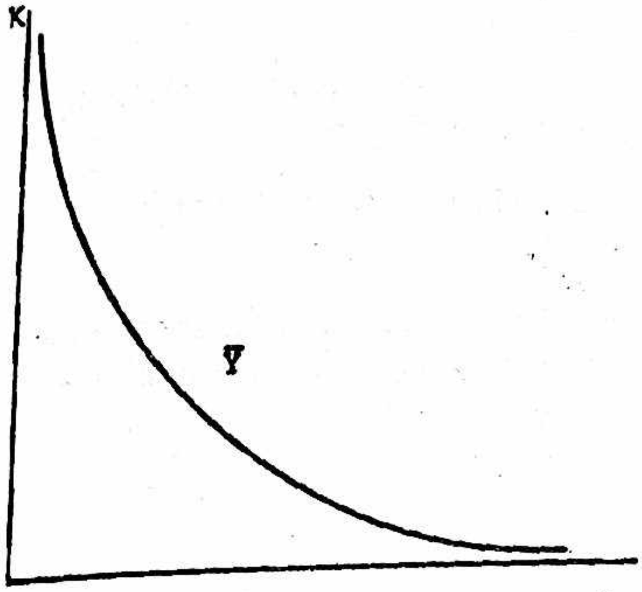
(E) Panel e



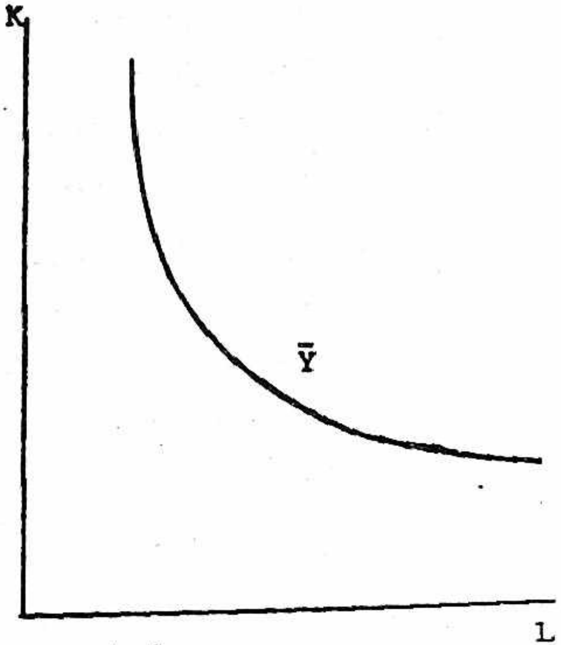
Panel a



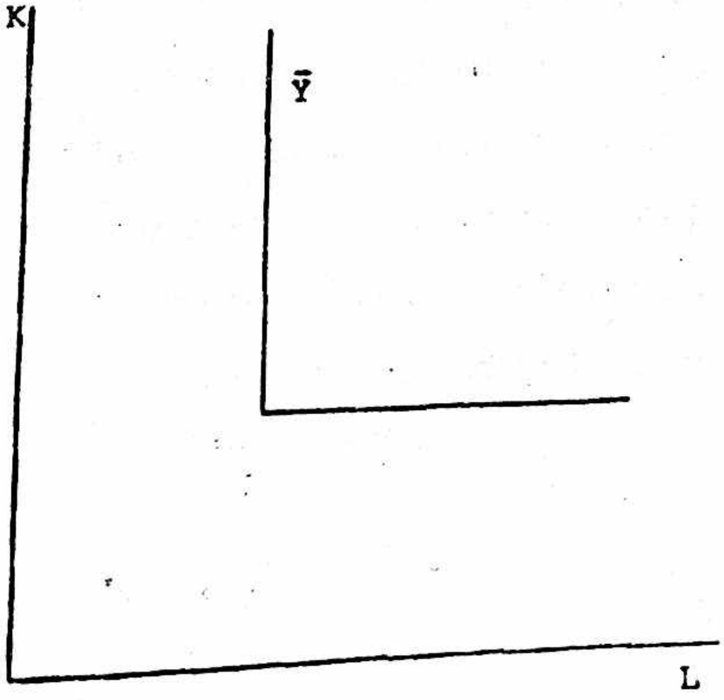
Panel b



Panel c



Panel d



Panel e

70. Suppose, in accordance with a model of production embodied in the production function given above, a regression of the form

$$\ln(w/p) = \alpha + \beta \ \ln(L/Y) + \epsilon$$

was run with w and p representing the wage paid to labor and the price of Y, respectively. Which of the following statements would be accurate?

(A) The estimate for α would be an estimate of the share of output paid to labor.

(B) The estimate for β would be an estimate of the share of output paid to labor.

(C) The estimate for α would be an estimate of the elasticity of substitution between capital and labor.

(D) The estimate for β would be an estimate of the inverse of the elasticity of substitution.

(E) The estimate for β would be an estimate of the inverse of the parameter b: a measure of some initial share of output paid to capital.

71. In monopolistic competition, firms desire to sell more output at equilibrium because

(A) price is greater than average cost

(B) price is greater than average variable cost

(C) price is greater than marginal cost

(D) price is equal to marginal revenue

(E) price is less than average cost

72. Consider a perfectly competitive firm that receives a market price of $10 for its output. It produces 10,000 units of output, and thereby incurs a marginal cost of $8 and a matching average cost of $8. You should expect

(A) the market price to rise above $10 and quantity produced by this firm to increase above 10,000 units, as long run equilibrium is achieved by the entry of new firms

(B) the market price to rise above $10 and the quantity produced by this firm to stabilize eventually at 10,000 units, as long run equilibrium is achieved by the exit of existing firms

(C) the market price to fall to $8 and the quantity produced by this firm to stabilize eventually at 10,000 units, as long run equilibrium is achieved by the entry of new firms

(D) the market price to fall to $8 and the quantity produced by this firm to stabilize eventually at 10,000 units, as long run equilibrium is achieved by the exit of existing firms

(E) the market price to fall below $8 and the quantity produced by this firm to fall below 10,000 units, as long run equilibrium is achieved by the entry of new firms

73. The Federal Reserve Board of the United States changed the targeting philosophy of its policy decisions in October of 1979. The result was

(A) an increase in the volatility of real and nominal interest rates

(B) a reduction in the volatility of real and nominal interest rates

(C) an increase in the volatility of the real interest rate even while the nominal interest rate held fairly stable

(D) an increase in the volatility of the nominal interest rate even while the real rate held fairly stable

(E) a surprising continuation of the historical pattern of stable real and nominal interest rates

74. Running tight monetary policy against expansionary fiscal policy can be expected to

(A) accelerate the contraction of private investment in the face of higher interest rates caused by the stimulus itself

(B) diminish the likelihood that inflation will be required to reachieve long run equilibrium at potential GNP

(C) reduce the role of inflationary expectations in the convergence to long run equilibrium

(D) diminish the ability of the tight money to lower inflation by causing a recession

(E) All of the above

75. The demand for money has suddenly increased. You are a policy adviser who has been asked to recommend a policy that will maintain GNP and keep interest rates constant. Which of the following would you recommend?

(A) A reduction in the supply of money coupled with an increase in government spending

(B) An increase in government spending

(C) An increase in the supply of money

(D) An increase in the supply of money, but only if it could be accompanied by a reduction in taxes

(E) No combination of policies could maintain current levels of both GNP and interest rates

76. Let the Keynesian "animal spirits" mysteriously cause people across the economy to spend more of their disposable income. You would, as a policymaker, recommend what policy change to combat which threatening macroeconomic problem?

(A) An increase in the supply of money to combat the threatening recession

(B) A reduction in taxes to combat the threatening inflation

(C) A combined reduction in both the supply of money and taxes to combat the threatening inflation

(D) A combined reduction in both the supply of money and government spending to combat the threatening inflation

(E) A combined increase in taxes and the supply of money to combat the threatening recession with lower interest rates

77. Purchasing power parity does not hold up as well in the short run as it does in the long run because

(A) prices are fixed in the short run and the resulting inflexibility is hard to describe theoretically

(B) substitution among similar goods is nearly impossible when international transactions are involved

(C) demand is not always 100% responsive to a price differential

(D) its conclusions are drawn from price stability – a long term phenomenon

(E) it is too difficult for consumers to build into their price expectations

78. Suppose that an economy's price adjustment is described by an expectations-augmented Phillips curve with expected inflation always set equal to last year's inflation. If a foreign oil shortage were to cause inflation to jump suddenly by 5%, then the rate of inflation

(A) would climb by 5 points in one year, but fall back to the original level the next year, even without recession, because the price shock was temporary

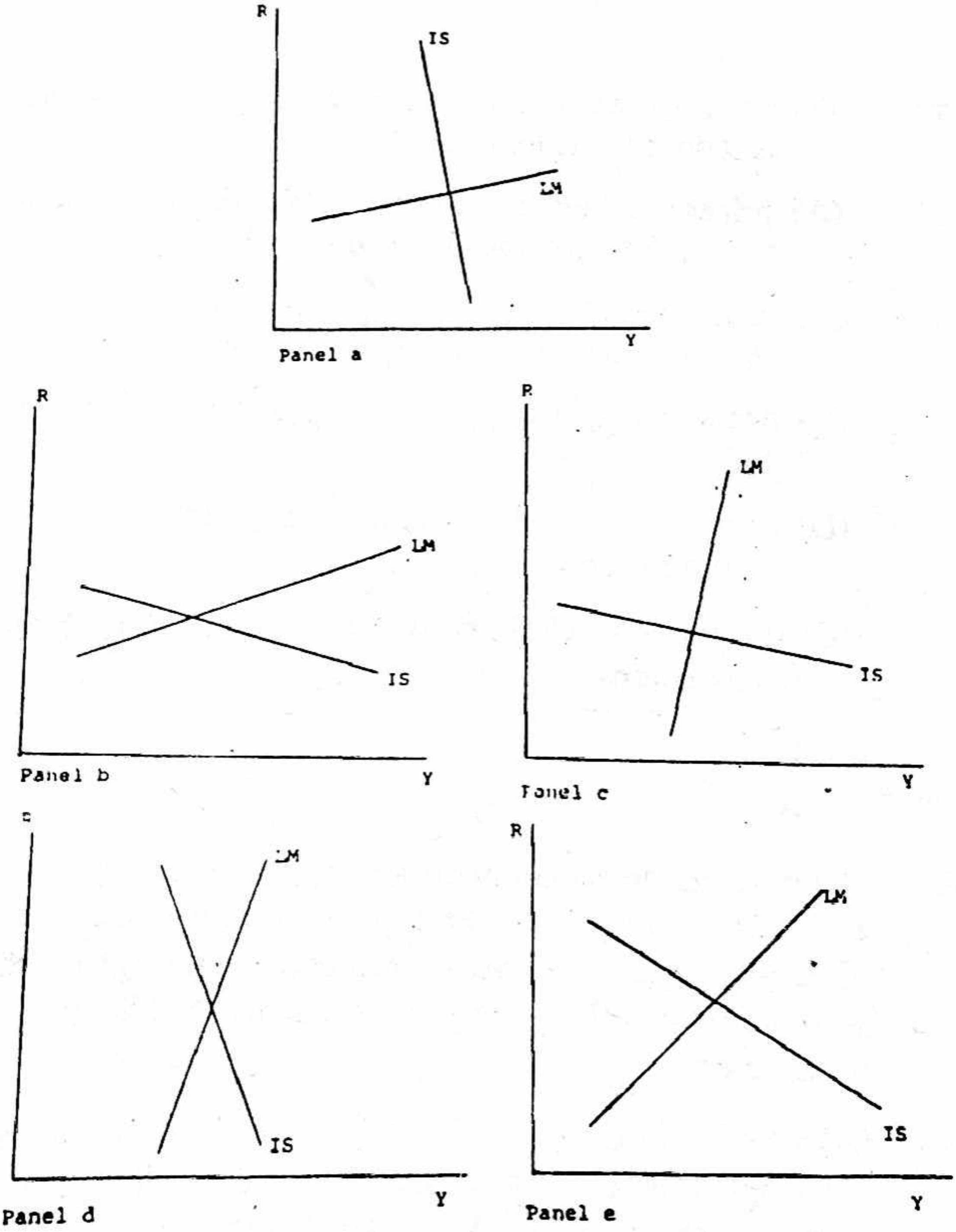
(B) would jump permanently by 5 points unless a recession or some other mechanism was arranged to lower expectations

(C) would begin an unavoidable period of price acceleration

(D) would fall only in response to some sort of energy rationing

(E) would rise only in response to some sort of energy rationing

Use the figure below to answer Questions 79, 80 and 81. In each, the effectiveness of policy is measured in terms of its ability to move equilibrium GNP.



79. Consider the five panels of the figure on the previous page. In which of the five would monetary policy be the weakest?

(A) Panel a
(B) Panel b
(C) Panel c
(D) Panel d
(E) Panel e

80. Consider the five panels of the figure on the previous page. In which panel would fiscal policy be the strongest?

(A) Panel a
(B) Panel b
(C) Panel c
(D) Panel d
(E) Panel e

81. Consider the five panels of the figure on the previous page. In which panel would the simultaneous imposition of restrictive monetary policy and expansionary fiscal policy cause the largest increase in interest rates?

(A) Panel a
(B) Panel b
(C) Panel c
(D) Panel d
(E) Panel e

82. The short run marginal propensity to consume is estimated on the basis of

(A) a straight line equation that most accurately describes consumption as a function of personal disposable income

(B) a curved line equation that most accurately describes consumption as a function of personal disposable income

(C) a straight line equation that most accurately describes year-to-year changes in consumption as a function of year-to-year changes in personal disposable income

(D) a curved line equation that most accurately describes year-to-year changes in consumption as a function of year-to-year changes in personal disposable income

(E) a curved line equation that most accurately describes consumption as a function of national income

83. In the dominant firm model, the profits of the competitive fringe are

(A) always negative because the dominant firm is trying to run them out of business

(B) always zero because of the competitive nature of the fringe

(C) always positive because the fringe is more efficient than the dominant firm

(D) any of the above depending upon the circumstances

(E) either positive or zero, but never negative

84. Suppose that you were to incorporate the repayment of a consumer loan interest and principle into an intertemporal budget constraint. The loan would be added as income in the year received and

(A) principle and interest would all be subtracted in the year the loan was finally paid off

(B) interest and principle would be subtracted in each year according to that schedule by which the loan was to be paid off

(C) interest would be subtracted immediately upon receipt of the loan, but principle would be subtracted only in the year that the loan was finally paid off

(D) only interest would be subtracted, and that only for the duration of the loan

(E) None of the above

85. As consumption becomes more sensitive to the real rate of interest,

(A) the IS curve gets steeper and monetary policy grows more effective in manipulating GNP in the short run

(B) the IS curve gets flatter and monetary policy grows more effective in manipulating GNP in the long run

(C) the IS curve gets flatter and monetary policy grows more effective in manipulating GNP in the short run

(D) the IS curve is unaffected, but monetary policy grows weaker nonetheless

(E) the IS curve gets steeper and monetary policy grows less effective in manipulating GNP in the long run

86. The property taxes a firm must pay on its plant and equipment have suddenly increased so that its fixed costs are now higher. On a graph illustrating this firm's cost curves, the marginal cost curve would

(A) move upward and to the right

(B) move downward and to the left

(C) move upward and to the left

(D) move downward and to the right

(E) not move at all

87. For the 30 year period from 1953 to 1983, the long and short run marginal propensities to consume in the United States have been stimated to be

(A) .78 and .91, respectively

(B) 11.2 and 4.1, respectively

(C) .91 and .78, respectively

(D) both equal to .91

(E) too volatile to attribute to a single number

88. Let the production of some good Y display constant returns to scale in the long run, and diminishing marginal productivity for all inputs. In the short run, during which time positive fixed costs are defined by the constant employment of one input, the average cost curve would

(A) be horizontal at the average cost of 1 unit of output because of the operation of constant returns

(B) display the usual U-shape

(C) show average costs declining for all levels of output and thus indicate the existence of a monopoly

(D) show average costs rising and exceeding marginal cost for all levels of output

(E) show average costs falling lower than marginal cost for all levels of output

89. The supply curve of a perfectly competitive firm

(A) is identical to the entire marginal cost curve

(B) is identical to the entire upward sloping portion of the marginal cost curve

(C) includes the upward sloping portion of the marginal cost curve above its intersection with average fixed cost

(D) includes the upward sloping portion of the marginal cost curve above its intersection with average variable cost

(E) includes the upward sloping portion of the marginal cost curve above its intersection with average cost

90. If purchasing power parity was perfectly applicable in both the short and the long runs, then you would expect to observe

(A) net exports depending upon real income and the real exchange rate

(B) net exports depending only upon real income

(C) net exports being exogenously fixed by policy makers

(D) net exports depending only upon movement in the real exchange rate

(E) net exports depending only on foreign variables

91. Empirical evaluations of interest rate parity suggest that

(A) it does well in explaining the expected movement of exchange rates

(B) it handles long run expectations well, but fails miserably in explaining the formation of expectations about short run movements in exchange rates

(C) it performs well under fixed exchange rates, but has little to say about the workings of the international economy under flexible rates

(D) an international interest rate differential is proportional to the expected depreciation of any given currency, but the constant of proportionality varies from one circumstance to another

(E) the theory cannot be proven.

92. Consider an individual anticipating 25 years of remaining work followed by 10 years of retirement. Suppose such an individual were to receive a permanent increase in disposable income. If he or she expected positive real interest rates to prevail over the foreseeable future, then forward-looking consumption theory would predict a marginal propensity to consume of

(A) something less than .71 depending upon expected real rates of interest.

(B) exactly .6 regardless of the real rates of interest.

(C) something over .6 but invariant to the real rates of interest.

(D) something over .71 depending upon the real rate of interest.

(E) something over the Keynesian estimate of .91, but unspecified because of insufficient information.

93. An entrepreneur who collects profits in the short run for a new invention is collecting

(A) the competitive rate of return on capital.

(B) temporary monopoly profit.

(C) rent.

(D) a Ramsey surplus.

(E) an illegal monopoly profit.

94. Which of the following most accurately describes a potential source of inefficiency in an income redistribution system?

(A) Total output falls noticeably, because people who are taxed most heavily to fund the system respond by reducing their work efforts.

(B) There are significant administrative costs to running any such system.

(C) Total output falls noticeably, because people who receive additional income from the system respond by reducing their work efforts.

(D) The total income transferred is not allocated according to any gauge of productive activity.

(E) Tax revenue usually devoted to other social programs must be reduced to make the redistribution system affordable.

95. The distribution of income in the U.S., on average, since 1981 has been to

(A) become less equal at an accelerated pace compared with the late 1970's

(B) become less equal at a slower pace compared with the late 1970's

(C) become more equal at an accelerated pace compared with the late 1970's

(D) become less equal at a slower pace compared with the late 1970's

(E) defy measurement by even the most skilled statisticians

96. Even though capital stocks have grown by large amounts during the last century, the rate of return on capital has not decreased very much due to

(A) constriction of the labor supply by unions so that the marginal product of capital has been held constant

(B) a concurrent rise in interest rates

(C) imperfect competition in the economy which maintains surplus profits

(D) changes in technology which have kept the marginal product of capital high

(E) the ability of the owners of capital to minimize the power of labor unions

97. If permanent income is always equal to disposable income in the current year, then a consumption function of the form $C = a + bYD(p)$ would

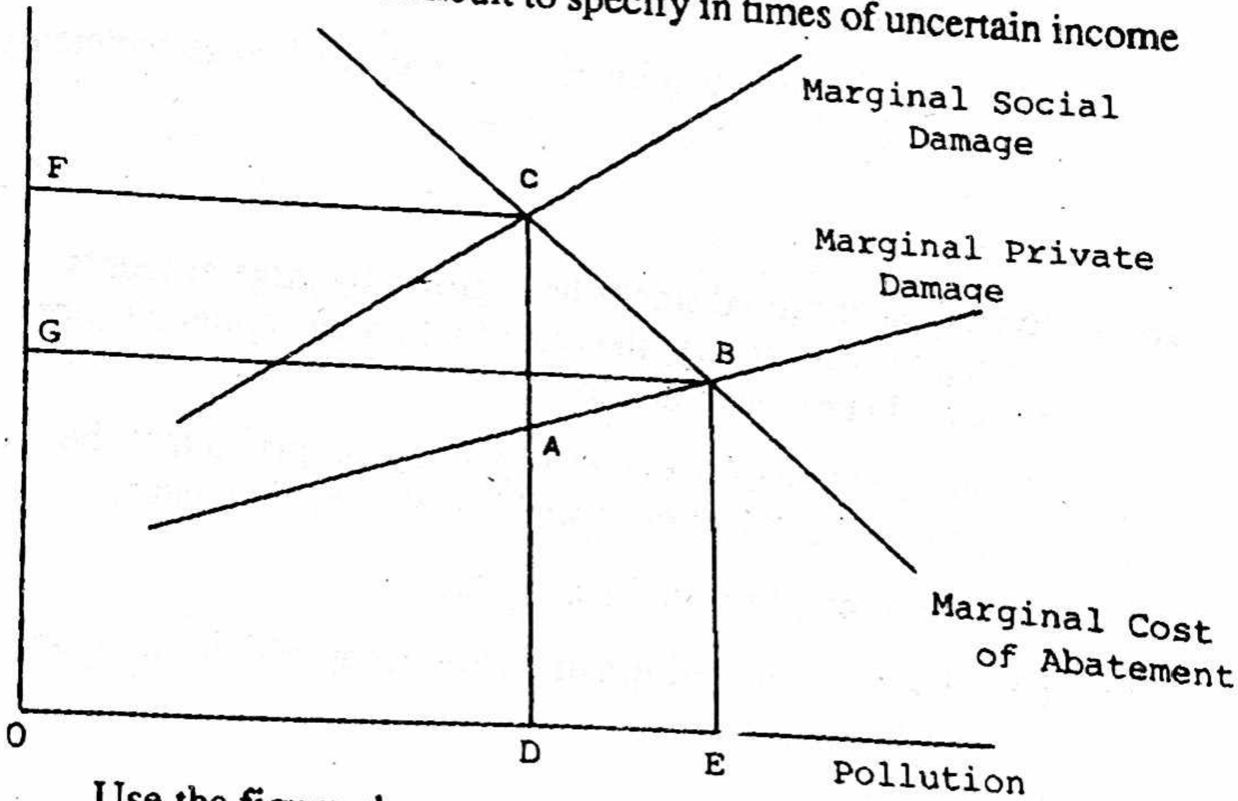
(A) reveal a long run marginal propensity to consume that was larger than the short run marginal propensity to consume

(B) reveal a long run marginal propensity to consume that was exactly equal to the short run marginal propensity to consume

(C) reveal a long run marginal propensity to consume that was smaller than the short run marginal propensity

(D) would define short and long run marginal propensities to consume, but insufficient information has been provided to compare them

(E) would be difficult to specify in times of uncertain income



Use the figure above to answer Questions 98 and 99.

98. Given the marginal cost schedules illustrated in the figure, what per unit charge on pollution would guarantee that the socially optimal level of pollution would be produced?

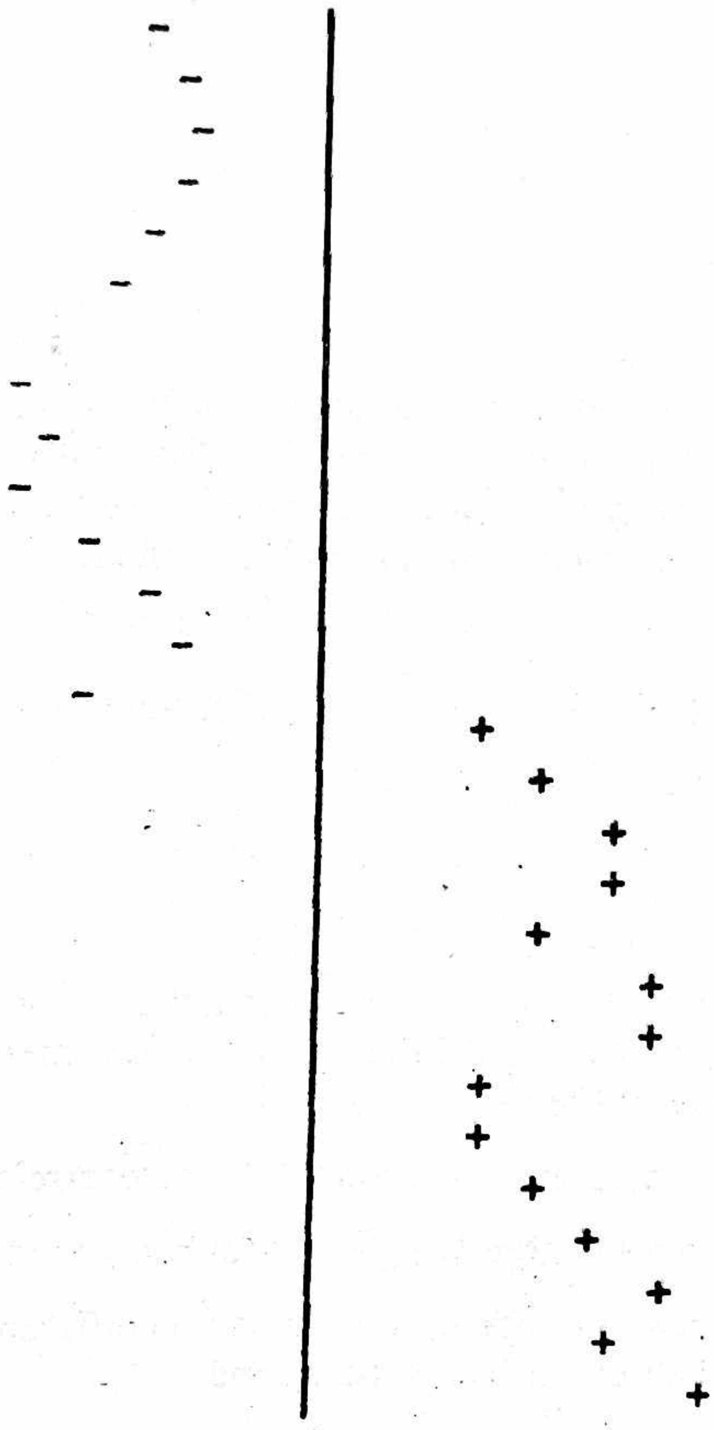
(A) OF
(B) GF
(C) BC
(D) AC
(E) None of the above

99. Given the marginal cost schedules drawn in the figure, pollution would have to be reduced by how much to move to the socially optimal level to the level that would be produced in the absence of any governmental regulation?

(A) OD
(B) OG
(C) FG
(D) ED
(E) None of the above

100. Suppose, having run a regression, that a plot of residuals like those pictured in the figure that follows emerged. Your next step would be to

(A) run a Durbin-Watson test for autocorrelation
(B) run a Durbin-Watson test for heteroscedasticity
(C) run a Quandt test for a structural difference from the first half of the data to the second
(D) investigate to determine if multicollinearity causes the cyclical pattern
(E) immediately divide the data and run two separate regressions



101. Economics has identified a large class of goods labeled "public." These "public goods" are frequently characterized or identified in terms of

(A) a cost of provision significantly smaller than the private benefit and a low cost of excluding people from joint consumption

(B) a cost of provision much greater than the private benefit and a high cost of excluding people from joint consumption

(C) a cost of provision much greater than the private benefit and a low cost of excluding people from joint consumption

(D) a cost of provision much less than the private benefit and a high cost of excluding people from joint consumption

(E) decisions about provisions emerging from exclusively public forums

102. Which of the following U.S. taxes is, by design, closest to being proportional to income?

(A) the Social Security tax

(B) the personal income tax

(C) the corporate income tax

(D) gift and estate taxes

(E) local property taxes

103. The profit maximizing output for a monopolist with positive variable cost is always

(A) greater than the revenue maximizing output

(B) equal to the revenue maximizing output

(C) less than the revenue maximizing output

(D) greater than the competitive output

(E) equal to the competitive output unless fixed costs are positive as well

104. With a positively sloped LM curve, the increase in GNP resulting from an increase in government spending

(A) is larger than the usual multiplier effect because the resulting lower interest rates would promote a secondary expansion in investment activity

(B) is smaller than the usual multiplier effect because the government would have to reduce the money supply to pay for its new spending

(C) is larger than the usual multiplier effect because the corresponding increase in the money supply would provide a second stimulative effect

(D) is smaller than the usual multiplier effect because the resulting higher interest rates would cause a secondary contraction in investment activity

(E) None of the above

105. Suppose that a log-likelihood plot of a regression estimate were to take the form shown in the figure below. The plus and minus one standard deviation range of the estimate would be

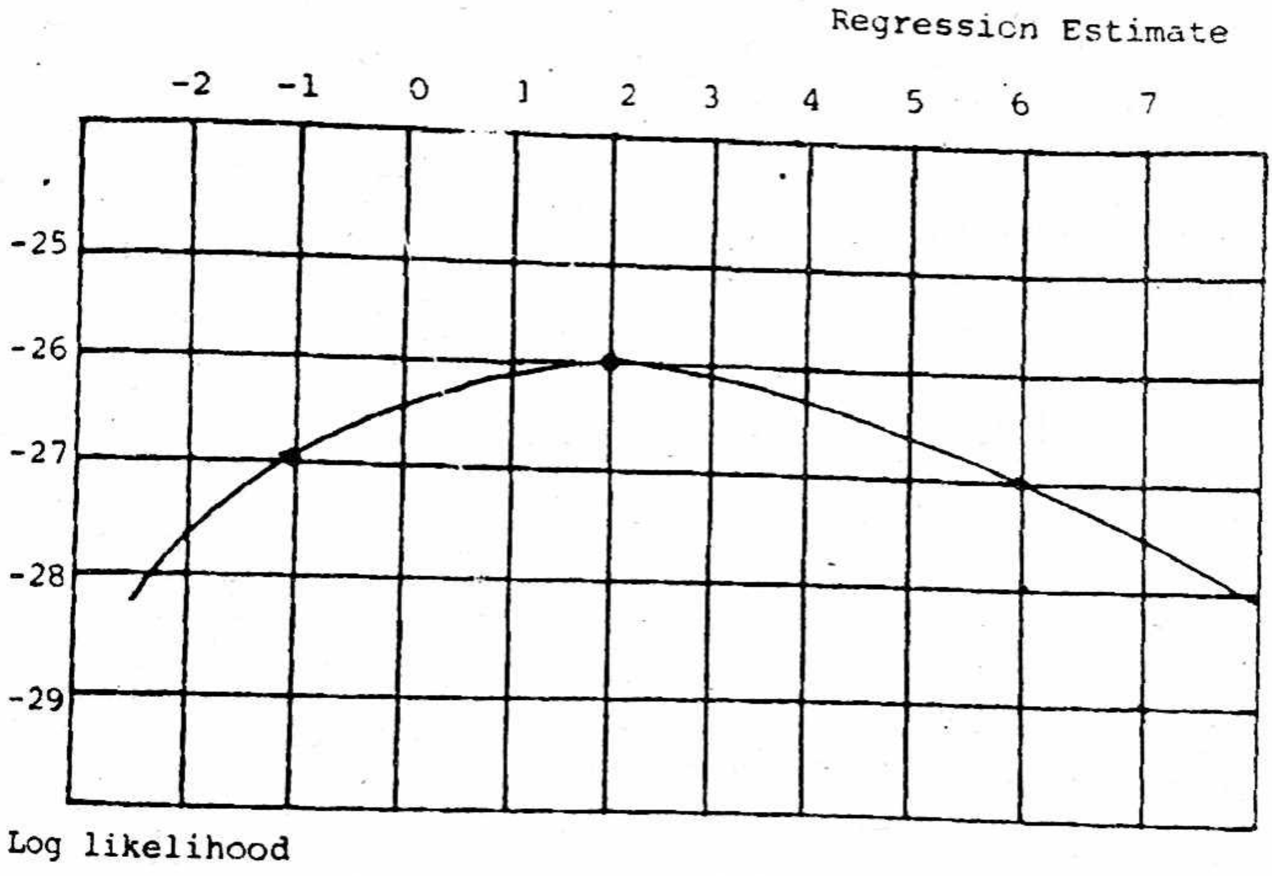
(A) -1 to +5

(B) -1 to 2

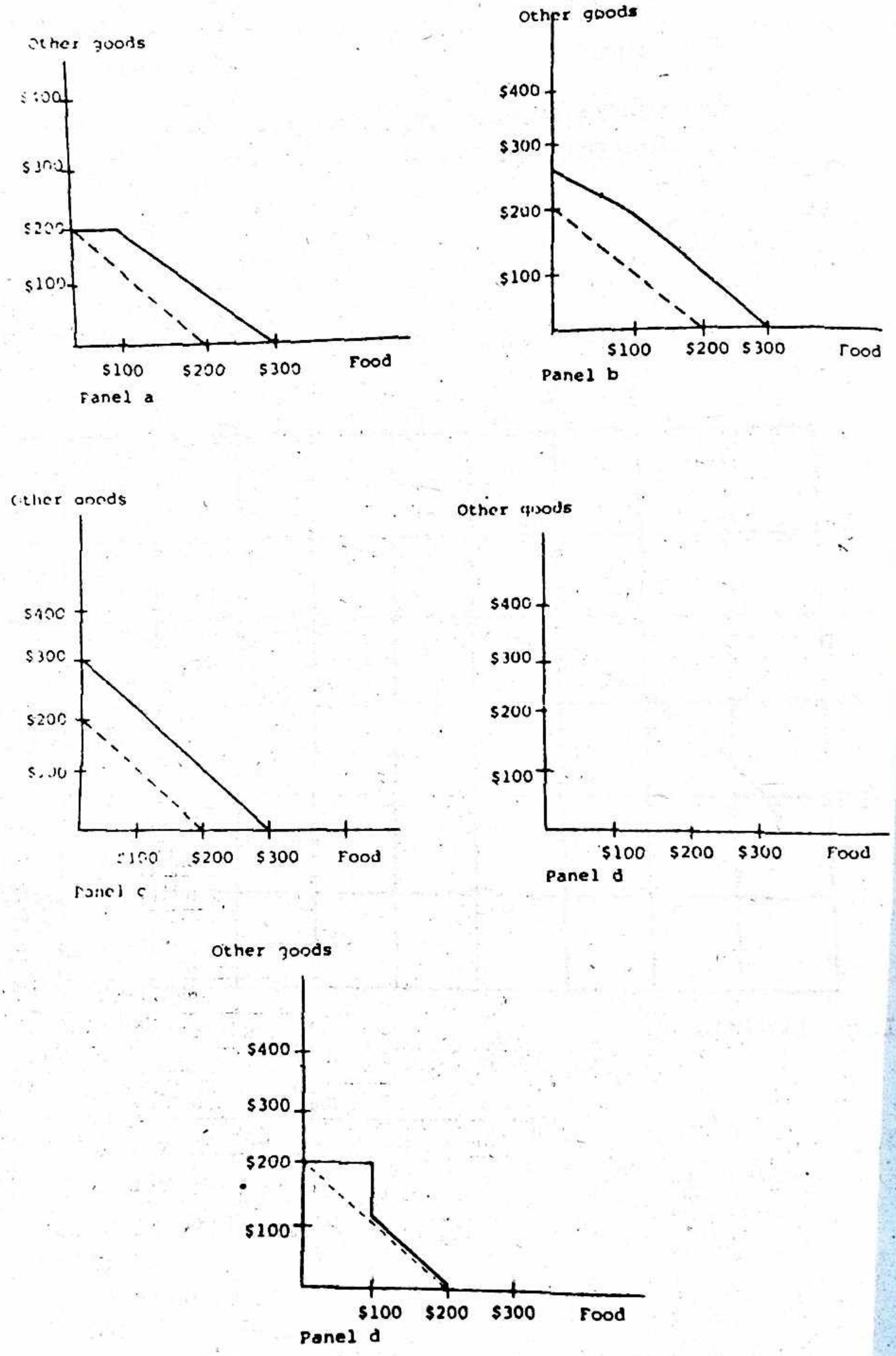
(C) 0 to +5

(D) -1 to 6

(E) some symmetric region around 2, but it cannot be specified from the information provided



Use the figure below to answer Questions 106 and 107. In each panel, the dotted line indicates the budget constraint before a program is introduced, and the solid line represents the budget constraint after a program is introduced.



106. Which panel in the figure accurately illustrates the budget constraint of a family that (1) earns $200 per week and (2) is suddenly allocated $100 in free, nonmarketable food stamps?

(A) Panel A

(B) Panel B

(C) Panel C

(D) Panel D

(E) None of the panels illustrate this situation accurately

107. Which panel in the figure accurately represents the budget constraint of a family that (1) earns $200 per week, (2) is allocated $100 in free food stamps, and (3) can sell the food stamps for any price?

(A) Panel A

(B) Panel B

(C) Panel C

(D) Panel D

(E) None of the panels accurately represents this situation

108. A consumer moves to a new equilibrium position as the result of a change in a market price, a change in income, or both. In the new equilibrium position, the marginal utilities of all goods consumed are lower than they were before. Two goods are consumed both before and after the change, and preferences are unchanged. This consumer

(A) is definitely worse off than before

(B) is definitely better off than before

(C) must have experienced either a reduction in income or an increase in price, but not both

(D) must have experienced both a reduction in income and a reduction in price

(E) may be better or worse off depending upon circumstances and information not provided in the question

In Questions 109 and 110, consider the two nations described in the chart below; the figures listed represent amounts of labor required to produce the indicated products:

	Nation A	Nation B
1 Unit of X	1 hr.	4 hrs.
1 Unit of Z	3 hrs.	8 hrs.

109. What would be the result of opening free trade between nations A and B?

(A) A will export both X and Z to B

(B) A will import X and export Z

(C) A will export X and import Z

(D) A will import both X and Z

(E) No trade will take place

110. Which of the following could emerge as the ratio of the price of X to the price of Z if trade were opened between nation A and nation B?

(A) 0.4

(B) 0.7

(C) 1.0

(D) 1.2

(E) 1.5

111. According to experience, a 2 point increase in real interest rates in the United States should

(A) cause real rates in the rest of the world to fall by more than 2%

(B) cause real rates in the rest of the world to fall by less than 2%

(C) cause real rates in the rest of the world to climb by less than 2%

(D) cause real rates in the rest of the world to climb by more than 2%

(E) cause the difference between the American rate and rates in the rest of the world to shrink

112. During the last 100 years, the share of national output attributable to labor in the U.S. has:

(A) increased considerably

(B) decreased considerably

(C) been uncertain due to measurement problems

(D) has remained relatively stable

(E) changed more dramatically than in most OPEC countries

113. The inclusion of a strong correlation between the exchange rate and the real rate of interest serves to

(A) make the IS curve steeper because higher interest rates mean higher exchange rates and larger net exports

(B) make the IS curve flatter because higher interest rates mean higher exchange rates and smaller net exports

(C) make the LM curve steeper because higher interest rates mean larger flows of currency into an economy and correspondingly greater sensitivity of the demand for money to changes in the interest rate

(D) make the LM curve flatter because higher interest rates mean higher exchange rates and smaller demand for foreign currencies

(E) make both the IS curve and the LM curve steeper because of interest rate parity

114. Exporters prefer

(A) monetary stimulus to fiscal stimulus because the higher interest rates associated with fiscal stimulus depreciate currencies and expand net and gross exports

(B) monetary stimulus to fiscal stimulus because the lower interest rates associated with monetary stimulus depreciate currencies and expand gross and net exports

(C) monetary stimulus to fiscal stimulus because the lower interest rates associated with monetary stimulus depreciate currencies and expand net exports if not necessarily gross exports

(D) fiscal stimulus to monetary stimulus because fiscal stimulus is usually directed at the export markets in lieu of protectionist legislation

(E) a laissez-faire policy that allows exchange markets and trade markets to be determined domestically by relative international competitiveness

115. The payment to a factor of production will be equal to:

(A) the average marginal product of each unit of the employed factor

(B) the marginal product of the final unit of the employed factor

(C) the average product of the employed factor

(D) the average rent per unit of the employed factor

(E) the marginal revenue product of the final unit employed

116. Suppose that the demand for money were to become increasingly sensitive to changes in the interest rate. In that case, you would expect to see

(A) the exchange rate become more sensitive to changes in fiscal policy

(B) the exchange rate become less sensitive to changes in fiscal policy

(C) no change in the sensitivity of the exchange rate to changes in fiscal policy

(D) an influx of foreign demand for domestic currency neutralize the increased sensitivity of domestic demand

(E) a reduction of foreign demand for domestic currency neutralize the increased sensitivity of domestic demand

117. A firm employs two factors of production, A and B. The price of A is $6 and its marginal product at equilibrium is 2. The price of B is $24 and its marginal product at equilibrium is 8. The production function calls for twice as much A to be used as B. If the price of A drops to $5, then

(A) its marginal product will rise

(B) the marginal product of B will fall below 6

(C) the production function will shift closer to an equal employment of the two inputs

(D) the marginal revenue product of A will fall below 12

(E) the marginal product of A will fall below 12

118. If you want to maximize tax revenue, you should advocate taxing inputs

(A) used in the production of goods with many substitutes

(B) used in the production of goods that are elastically demanded

(C) used in the production of goods that are inelastically demanded

(D) used in the production of goods that have price elasticities of demand equal to approximately 1 so that total sales are unaffected

(E) with many substitutes in the production of all goods

119. External economies are sometimes caused by an absence of rent for a scarce public factor of production. In such a circumstance, they might be corrected by

(A) a user fee which would lower the marginal product of the input

(B) a tax which would be aimed at those consumers with inelastic demand

(C) a user fee which would raise the price consumers pay until it matches society's marginal cost

(D) a tax on the final good which uses this factor in order to reduce consumption of the factor

(E) Any of the above

120. Suppose that a firm has the opportunity to employ a new machine that will increase production by 5 units and will cost $10 to purchase. If each unit of output can be sold for $5, then

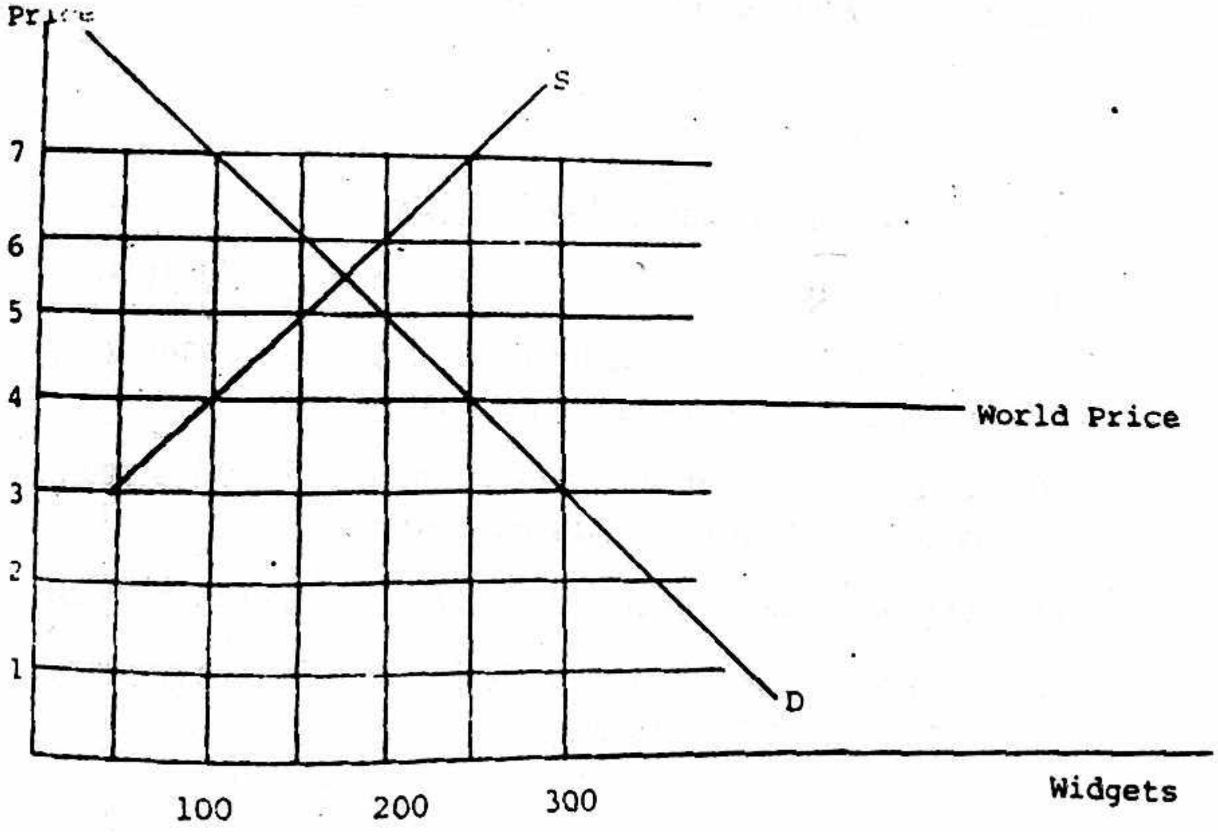
(A) the marginal revenue product of the machine is less than its cost, and the firm should not take advantage of the opportunity

(B) the marginal product of the machine is exactly equal to the price of output, and the firm should therefore take advantage of the opportunity

(C) the marginal revenue product of the machine is equal to $5, the price of output, and the firm should therefore take advantage of the opportunity

(D) the marginal revenue product of the machine is greater than its price, but the firm should not take advantage of the opportunity unless it assesses the output market further

(E) the marginal revenue product of the machine exceeds its cost, and the firm should take advantage of the opportunity



121. In the figure above, what would the government revenue gain from the imposition of a $1.00 tariff on the sale of widgets?

(A) $1250
(B) $1000
(C) $500
(D) $250
(E) $50

122. If 5 hours are required to produce either of two goods, then, according to the labor theory of value,

(A) the exchange ratio between the two goods should be 1 to 1
(B) the ratio of constant capital to variable capital should be 1 in the production of both
(C) variable capital should be worth at least twice as much as constant capital in the production of either
(D) social planners are required to allocate resources between the production of one good and the production of the other good
(E) neither good is worth the effort to produce

123. Eastern European countries like Hungary

(A) are moving even closer to literal Marxism in the 1980's
(B) have, by and large, established laissez-faire economic policies in every sector but national security
(C) are increasing their utilization of price and profit signals as they plan for the 1980's and beyond
(D) are growing faster than comparable economies in the West
(E) are disallowing their citizens' desires for Western goods by increasing border restrictions

124. According to research by Denison, which of the following is not a step which could be taken to cause a major increase in real potential economic growth?

(A) A complete taxation of the surpluses caused by pure economic rent

(B) An increase in the domestic rates of savings and investment

(C) An increase in research and development

(D) A switch in government spending from strategic programs to domestic spending

(E) Any of the above could increase real economic growth

125. Regard goods X and Y as substitutes, but not perfect substitutes; neither is an inferior good. If the price of X was to rise, then the substitution effect to be noted in the utility maximizing level of consumption of Y should

(A) be zero because demand for Y in this circumstance is insensitive to changes in the price of X

(B) push the consumption of Y up in direct opposition to the income effect that should push the consumption of both X and Y lower

(C) push the consumption of Y down to exaggerate the income effect that should push the consumption of both X and Y lower

(D) push the consumption of Y up an amount exactly equal, in percentage terms, to the simultaneous substitution effect that pushes the consumption of X down

(E) push the consumption of Y down an amount exactly equal, in percentage terms, to the simultaneous substitution effect that pushes the consumption of X down

126. The international debt crisis of the last decade occurred, at least in part, because of

(A) high underemployment in the poor countries and poorly managed development projects

(B) high interest rates and an international recession that caused international markets for third world exports to contract

(C) a world-wide fall in the marginal product of labor

(D) anti-democratic governments in South America who colluded with profit-minded bankers

(E) an excess of capital in the developing countries

127. Suppose that wages paid for an hour's labor were to increase. The income effect of such an increase

(A) always works to keep the labor supply curve positively sloped

(B) can work to make the labor supply curve vertical at full employment

(C) can actually work to reduce the full employment supply of labor without appropriate taxation policies

(D) can push the vertical region of the labor supply curve well beyond the marginal revenue product schedule of derived demand

(E) always works against the substitution effect by increasing (decreasing) the desired level of leisure time as wages increase (fall) assuming that leisure is a normal good

128. When an isocost locus is characterized for a production process with more than 2 inputs, it is implicitly assumed that

(A) total expenditure on all but 2 inputs is constant

(B) the prices of all but 2 inputs are constant

(C) the quantity of output being produced is constant

(D) total expenditure on at least one input is constant

(E) total expenditure on all inputs and all input prices are constant

129. If inflation is 5% and depreciation is running 15%, a video game costing $2000 and producing an annual revenue of $200 has a real rate of return of

(A) 10% per year

(B) $200 per year

(C) 20% per year

(D) 0% per year

(E) -10% per year

130. The largest lenders to less developed countries are

(A) western governments

(B) multi-lateral agencies

(C) private banks

(D) individual investors who purchase government bonds

(E) agencies of the U.S. government, particularly under the Reagan Administration

131. "Disguised unemployment" represents

(A) deficiencies in population statistics that give incorrect impressions of the labor force

(B) collections of self-employed workers that claim to need employment

(C) collections of workers in traditional occupations who cannot be enticed to move to industrial employment

(D) unemployment attributable to insufficient international demand for output

(E) collections of agricultural workers whose marginal products are nearly zero for all or most of every year

132. The gap, between developed and less developed countries, as measured in terms of per capita income, is

(A) diminishing for developing countries that embrace the market system, but widening for those who try to be centrally planned

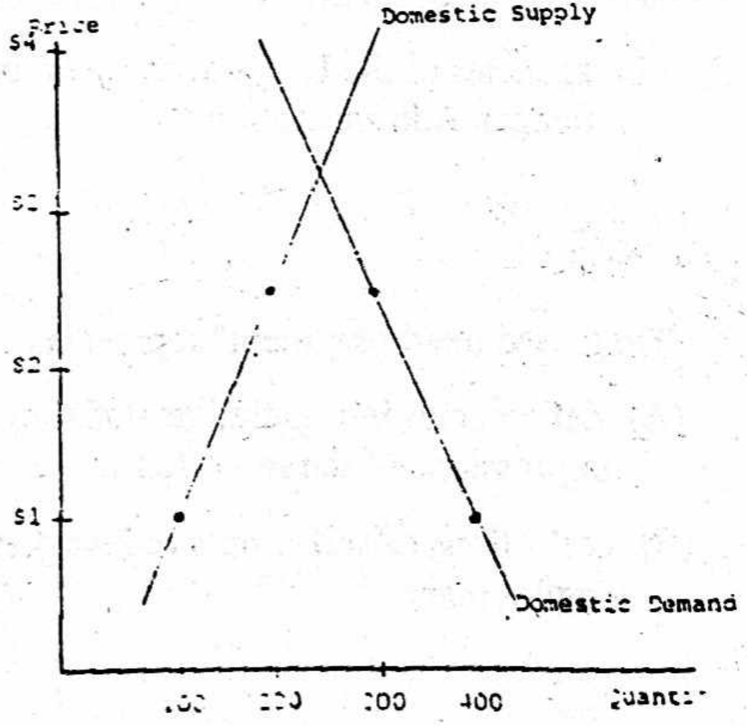
(B) almost impossible to measure with any statistical significance

(C) decreasing slowly in response to generous foreign aid programs from both the West and the East

(D) diminishing for countries that have concentrated their investment in social overhead capital

(E) not moving perceptibly in most cases, and may even be widening in some cases

Use the figure below to answer Questions 133 and 134.



133. Consulting the figure above, what size tariff would be prohibitive if the world price was $1.00?

(A) $1.75

(B) $2.25

(C) $3.25

(D) Over $4.00

(E) A prohibitive tariff cannot be determined

134. If the world price was $1.00 in the figure, what size quota would be required to maintain a domestic supply of 200 units?

(A) 0 units

(B) 50 units

(C) 100 units

(D) 150 units

(E) 200 units

135. A firm is operating in circumstances of perfect competition with a market price of $5. At its present level of output, average cost is $4. This firm

(A) could certainly increase its profit by increasing its output

(B) could certainly increase its profit by decreasing its output

(C) is making a profit, but there is not enough information provided to determine whether or not its profits could improve if it were to increase or decrease its output

(D) is losing money and should think about shutting down depending upon whether or not it is covering average variable cost

(E) is just breaking even in a long run equilibrium situation

GRE ECONOMICS
TEST II

ANSWER KEY

1.	B
2.	B
3.	C
4.	D
5.	B
6.	D
7.	D
8.	C
9.	C
10.	E
11.	A
12.	E
13.	C
14.	B
15.	C
16.	B
17.	B
18.	A
19.	E
20.	D
21.	A
22.	D
23.	D
24.	A
25.	E
26.	E
27.	A
28.	D
29.	B
30.	A
31.	C
32.	C
33.	C
34.	B
35.	C
36.	C
37.	D
38.	C
39.	E
40.	C
41.	A
42.	E
43.	B
44.	A
45.	B
46.	A
47.	D
48.	C
49.	A
50.	C
51.	E
52.	E
53.	A
54.	D
55.	E
56.	C
57.	D
58.	E
59.	C
60.	C
61.	A
62.	C
63.	C
64.	B
65.	A
66.	D
67.	B
68.	C
69.	A
70.	D
71.	C
72.	C
73.	A
74.	E
75.	C
76.	D
77.	C
78.	B
79.	A
80.	A
81.	D
82.	C
83.	E
84.	B
85.	C
86.	E
87.	C
88.	B
89.	D
90.	B
91.	A
92.	D
93.	B
94.	A
95.	A
96.	D
97.	B
98.	D
99.	D
100.	C
101.	B
102.	A
103.	C
104.	D
105.	D
106.	A
107.	C
108.	B
109.	C
110.	A
111.	C
112.	D
113.	B
114.	B
115.	E
116.	B
117.	D
118.	C
119.	C
120.	E
121.	E
122.	A
123.	C
124.	A
125.	B
126.	B
127.	E
128.	E
129.	E
130.	C
131.	E
132.	E
133.	B
134.	C
135.	C

GRE ECONOMICS TEST II

DETAILED EXPLANATIONS OF ANSWERS

1. (B)

Equilibrium requires that the given price supports an equality of the quantity demanded and the quantity supplied, regardless of elasticity, any concern about maximizing revenue, or any notion of government intervention. Stability simply implies that any perturbation in either price or quantity caused by small, temporary, random changes in circumstance, disappears by the workings of the marketplace so that the original equilibrium is re-established.

2. (B)

Marshall observed that the longer the time period considered, the larger the possibility of adjusting the quantity supplied to a change in price. Rather than simply running an existing process harder, for example, it could be duplicated. He argued that the quantity response to a change in price should be larger in the longer run and thus more elastic. Starting then at an initial price and quantity pair, more elastic long run supply translates into a flatter supply curve.

3. (C)

The rental price of the capital is, for all intents and purposes, the price of capital. An increase in the rental rate should, therefore, inspire some substitution away from the capital (the more expensive factor of production) and into another input whose price is unaffected (in this question, labor).

4. (D)

The marginal productivity of capital does decline with the quantity of capital employed, just like any other input. The marginal benefit schedule of capital is not its derived demand curve; that is, its marginal revenue product curve matches the marginal benefit curve only for firms operating in competitive markets. The quantity of labor employed is irrelevant.

5. (B)

A company's balance sheet represents an attempt to calculate the total value of the company – its cash, physical assets and inventories. The value of its physical assets must reflect true economic value at some point in time and not just their cost when purchased. Each was purchased, though, because the present value of the stream of expected returns exceeded the cost. As the assets are used, that stream gets shorter and its future economic value declines. Depreciation recorded on a balance sheet reflects this decline.

6. (D)

It is important to distinguish between a concept like "rational expectations" and some of its implications under certain conditions. The term "rational expectations" means nothing more than people being rational in the formation of their opinions and decisions. They should, therefore, use as much information as possible in the process, particularly as they determine their views about what is most likely to occur in the future. In so doing, they may render policies ineffective, but that is a result of the process which can be disputed rather than a definition of a hypothesized mode of behavior which cannot be disputed.

7. (D)

The last dollar earned by the individual cost him \$.50, so the effective marginal tax rate is (\$.50/\$1.00)x100% = 50%. Total benefits foregone equal \$25.00, so the average tax based on total income (welfare benefit plus earned income) is [\$25.00/(\$200.00+\$125.00)]x100% = 7.7%.

8. (C)

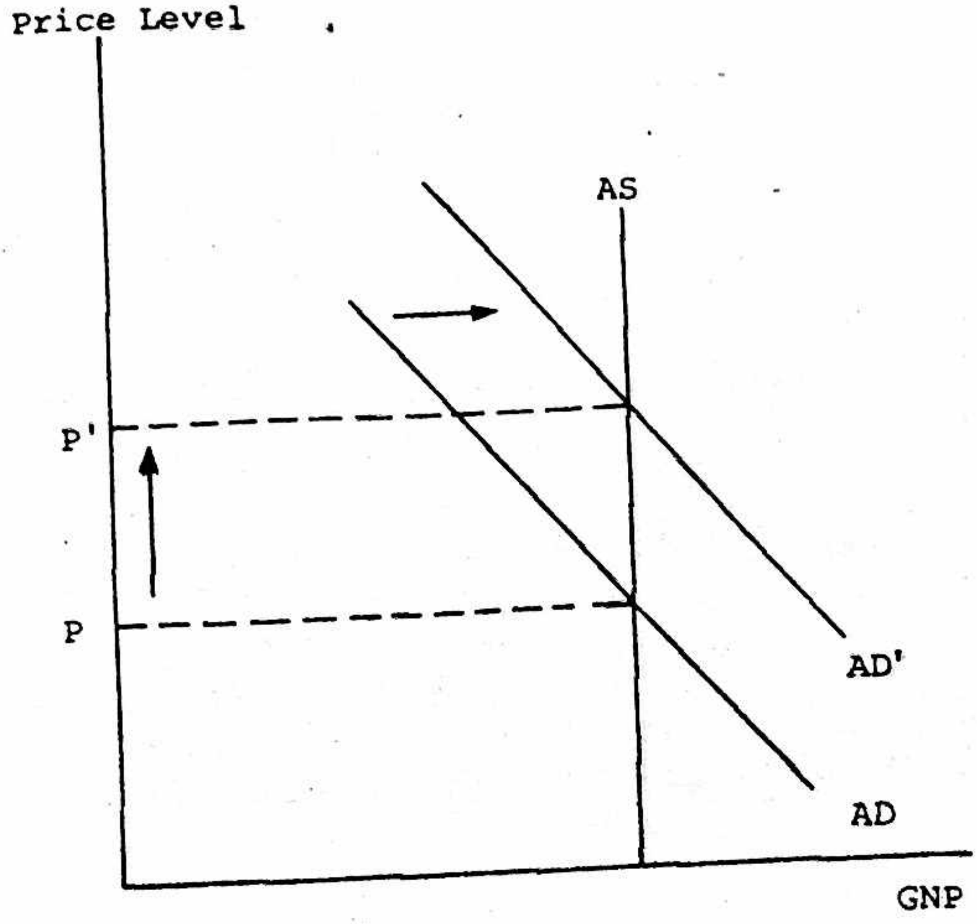
Real GNP is, by definition, equal to nominal GNP divided by price level; i.e.

$$\text{Real GNP} = \frac{\text{Nominal GNP}}{\text{Price Level}}$$

The rate of change of real GNP is, therefore, equal to the rate of change of nominal GNP minus the rate of change of prices. For the data in the question, the rate of change in real GNP is 5% - 5% = 0%.

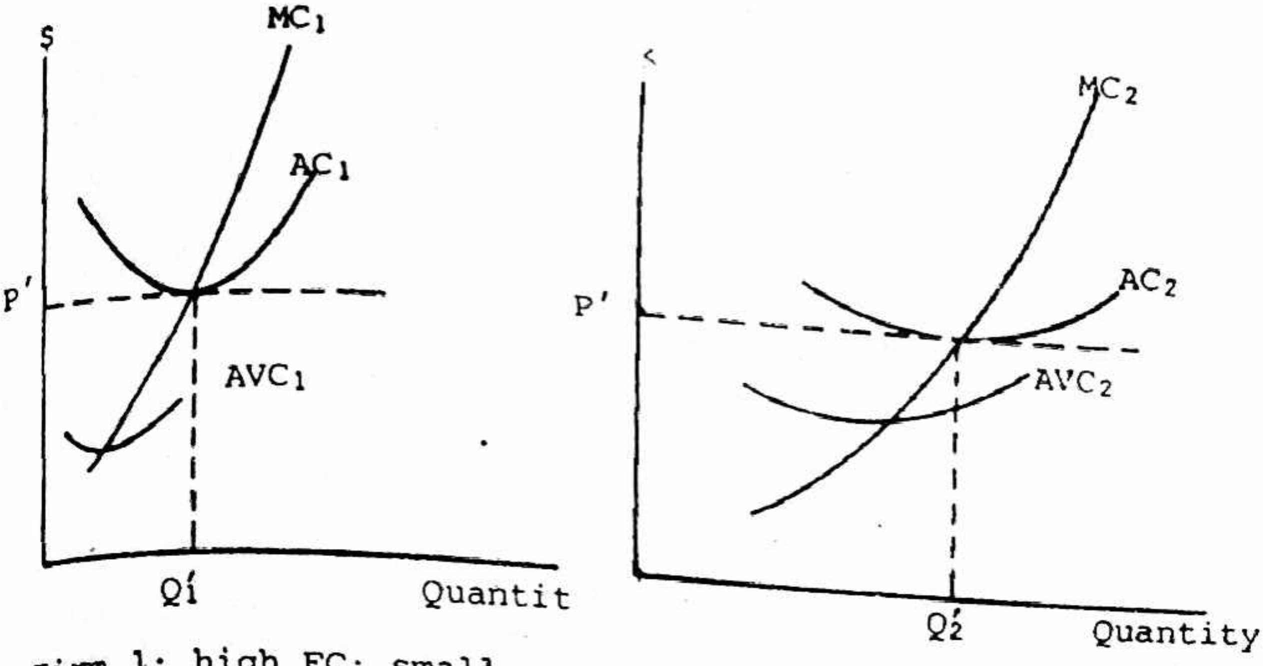
9. (C)

The harder the brakes are applied, the stronger will be the immediate effect of contraction, and thus the larger the GNP gap in the short run. Moreover, the larger the short run gap, the wider is the spiral of recovery back towards equilibrium, because the economy will dramatically overshoot equilibrium on the low side of the long run rate of inflation, associated with both the natural rate of unemployment and some prescribed rate of growth in the money supply.



10. (E)

If prices are completely flexible, then the aggregate supply curve is vertical as shown in Figure A1. Any shift in the aggregate demand, regardless of its source, must therefore produce only a price effect. For example, an increase in the aggregate demand from AD to AD' should be expected to increase prices from a level like P to one like P'. Intuitively, if prices are completely flexible, then any amount of excess demand (supply) in any market must result in an increase (a decrease) in pric


$
MC1
AC1
P'
AVC1
Q1'
Quantit
<
MC2
AC2
P'
AVC2
Q2'
Quantity

Firm 1: high FC; small scale; price P' => Q'$_1$

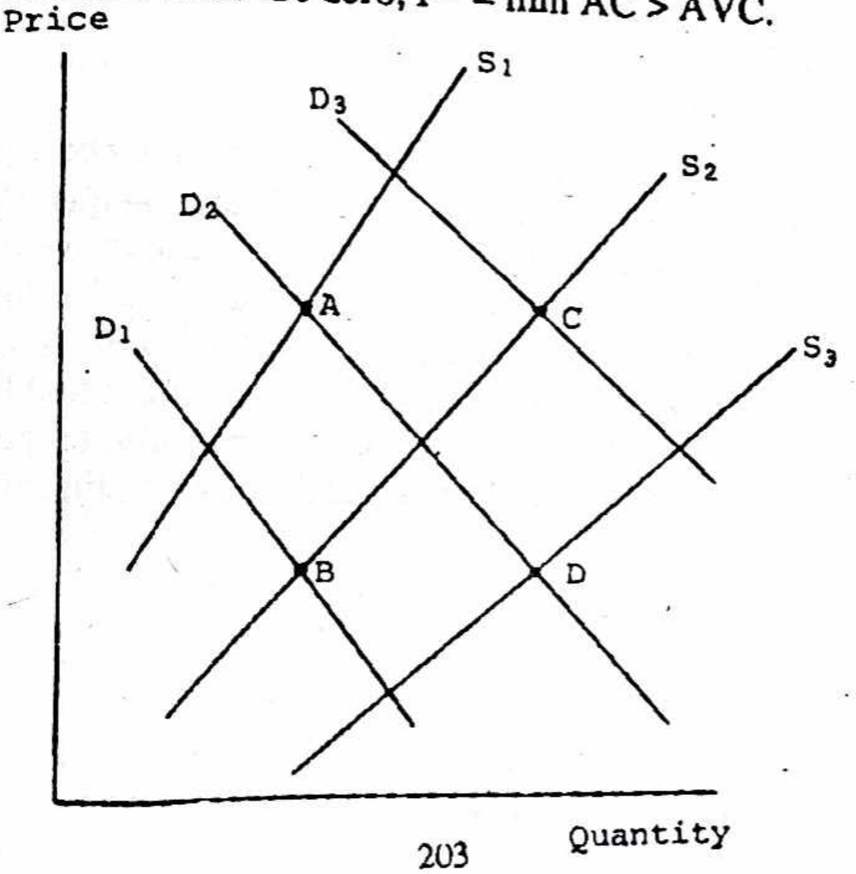
Firm 2: lower FC; larger scale; price P' => Q'$_2$

Figure A2

11. (A)

In competitive equilibrium, all firms operate where price equals marginal cost. Since they all set marginal cost equal to the same price, their marginal costs must be equal. All of the other components of cost can be individually specific to given firms depending upon size, even though the usual competitive model assumes that all firms are identical. Figure A2 illustrates the cost structures of two different firms with different supply schedules (i.e. different MC curves), different levels of output, and different fixed costs at an equilibrium price (min AC) of P*. Unless fixed costs are zero, P* = min AC > AVC.

Figure A3


Price
S1
D3
S2
D2
A
C
D1
S3
B
D
Quantity

12. (E)

All four points cannot lie along either a single supply curve with some upward slope, or a single demand curve with some downward slope. In fact, at least three supply curves and three demand curves are required to handle all four points. Figure A3 indicates how four separate equilibria could be supported by three of each. Points A, B, C, and D can be generated by (D2,S1), (D1,S2), (D3,S2), and (D2,S3), respectively.

13. (C)

A single demand curve of the usual downward slope can accommodate both points A and D (e.g., demand curve D2 in Figure A3). To move from A to D, though, the supply curve must shift out (from S1 to S3 in Figure A3). Drawing any of the other listed possibilities could not achieve the same shift.

14. (B)

The Rawlsian objective is to make the least fortunate individuals as well off as possible. Since the income paid to the lower income citizens is measured on the vertical axis, the objective is to get to the highest point on the social income constraint.

15. (C)

The total deadweight loss is the sum of the income lost by both people in moving to point Z from point E. The point reflects an equal sharing of the initial total income of point A. It is impossible to move from A to E, though, because of disincentive effects, so that the richer individual loses a share of possible income equal to the length FD measured in income along the horizontal axes and the poorer individual loses a share of possible income equal to length GH; incidently, lengths FD and GH are identical because they lie along the 45-degree line of equal incomes.

16. (B)

Speculative expectations might determine some investment, but macro investment is more tied to actual interest rates and real GNP. Why? Because current conditions matter directly to inventories (a component of macro investment) and because current conditions strongly influence expectations. Investment is volatile, but not because of speculation. Finally, the recent U.S. experience has been driven by changes in investment, to be sure, but also a variety of other internal and external conditions and policies.

17. (B)

Increases in real interest rates are, as a matter of record, closely associated with downward turns in economic activity. Major components of aggregate demand, mostly captured within investment through inventories and housing, are strongly and negatively correlated with changes in the real interest rate. Higher real rates, therefore, work to reduce aggregate demand (shift the IS curve in) and slow the growth of real GNP. The workings of interest rates in housing demand are not mysterious. Most people borrow to purchase housing. When interest rates climb, the monthly cost of carrying a mortgage climbs, and the amount of money that people can comfortably borrow falls. They buy cheaper houses or no houses at all.

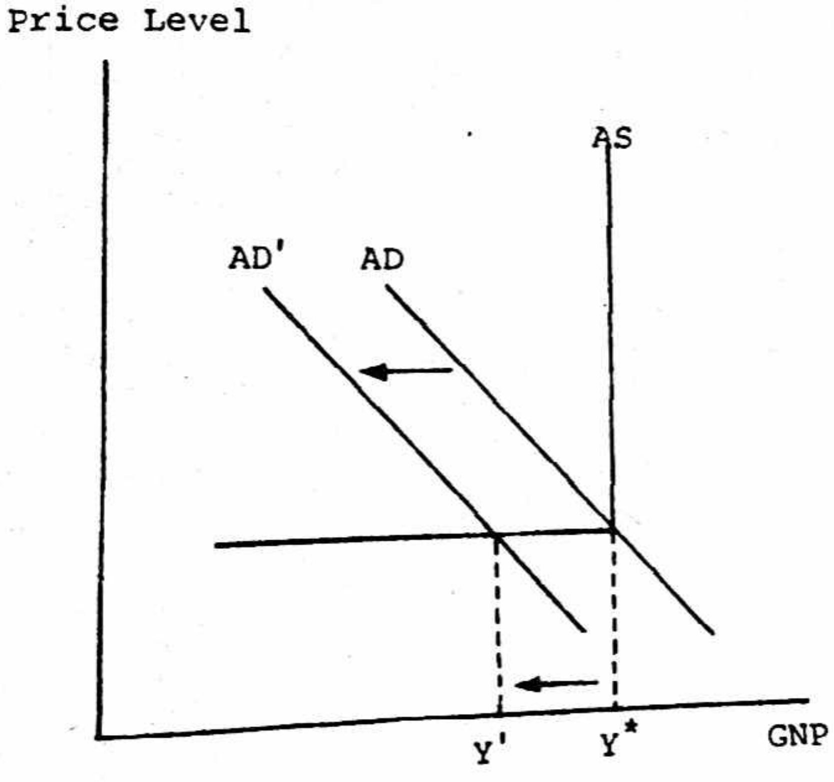


Figure A4

18. (A)

A reduction in aggregate demand at every price level should create downward pressure on output and/or prices, but not potential GNP. In Figure A4, potential GNP is indicated by Y*, above which the aggregate supply turns vertical; sticky prices are indicated to the left of Y* by a horizontal segment of the aggregate supply. A shift in the aggregate demand from AD to AD' shifts equilibrium from E to E', showing actual GNP falling below its potential. Therefore, unemployment must result. If there were any price movement, it would be downward, but according to the sticky price model, that would not happen in the short and medium runs.

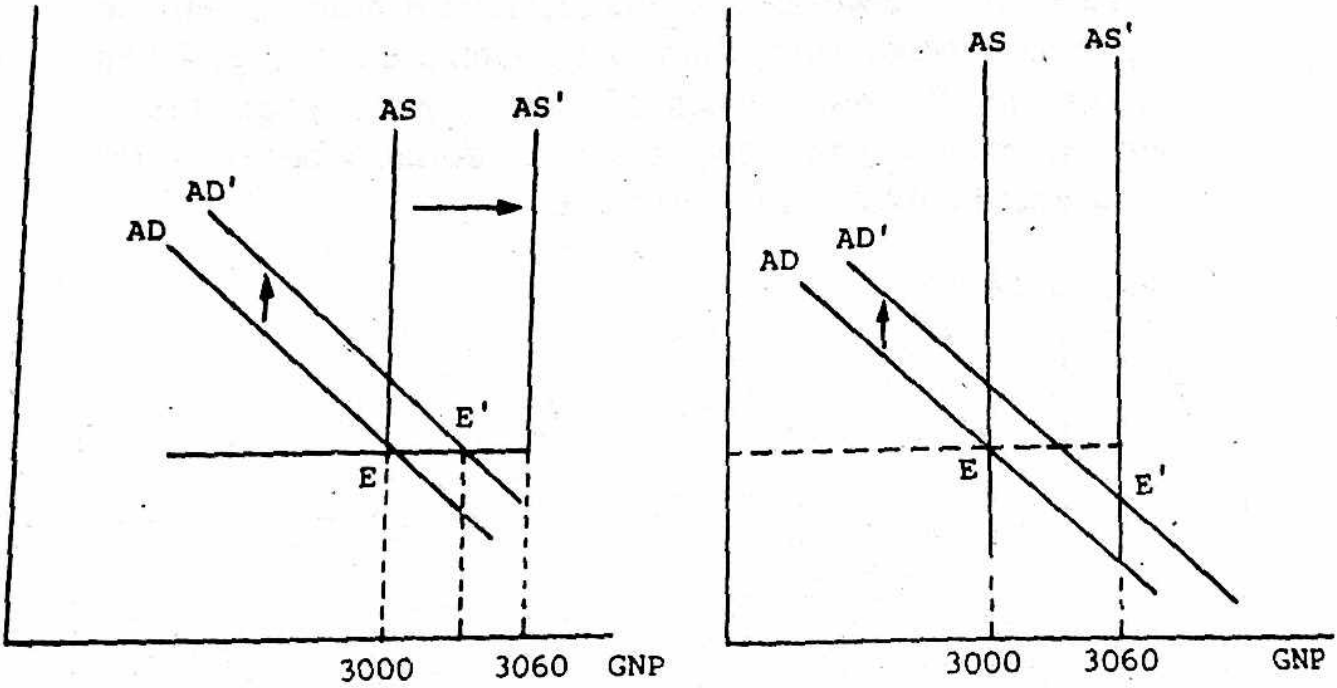


Figure A5

19. (E)

The sticky price model is illustrated in Panel A of Figure A5. Point E is the initial equilibrium. The 2% increase in potential GNP is reflected in the shift in the aggregate supply from AS to AS', and the increase in the aggregate demand by the shift from AD to AD'. Note that the new equilibrium E' falls short of the new level of potential GNP ($3,060) at $3,030, indicating immediate unemployment and eventual downward pressure on prices. The flexible price model is illustrated in Panel B, with the slower growth in aggregate demand showing up only in a move from E to E' with the lower prices associated with continued full employment. Growth recessions are thus inconsistent with completely flexible prices.

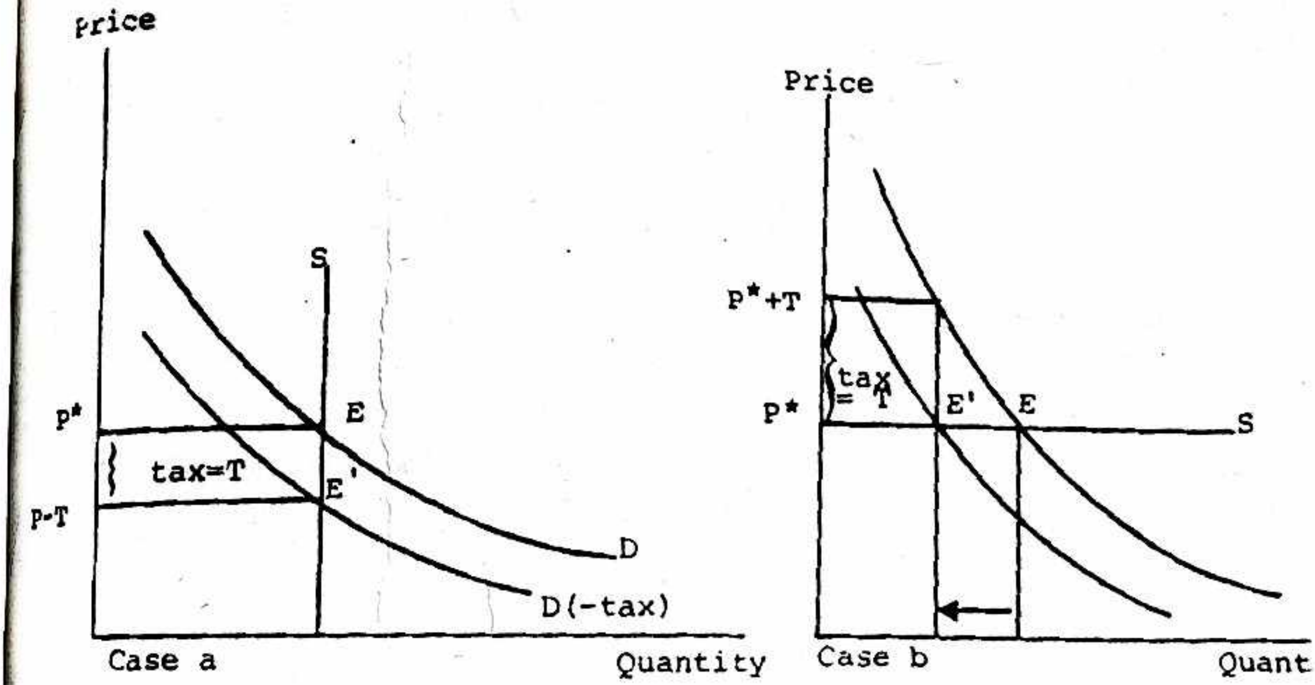


Figure A6

20. (D)

The price elasticity of demand is only one of the elasticity parameters required to determine the degree to which the burden of a tax is shared by a seller and a buyer. Figure A6 shows the two extreme cases, depending upon the elasticity of supply. In case a, supply is perfectly inelastic and the supplier bears the entire burden; in case b, supply is perfectly elastic and the buyer pays the entire tax. Any distribution in between is possible. The tax might be sufficient to cause the market to collapse, but that result is by no means certain.

21. (A)

With the prices equal, only a comparison of marginal utilities is required. Since the marginal utility of consuming X is greater than the marginal utility of consuming Y, welfare would increase by consuming less Y (e.g., 1 unit) and using the money thereby released ($10 in the example) to purchase more X (one more unit of X).

22. (D)

Only the subtraction of income taxes is listed among the alternatives with the correct sign; they are subtracted in the calculation that produces DI from NI. Excise and sales taxes, nonbusiness interest, and transfer payments from government are added to NI in the process; contributions for social insurance are subtracted.

23. (D)

A current account deficit indicates a domestic economy's need for borrowing from abroad to finance excessive consumption (imports in excess of exports). Part of domestic consumption is a government component that may or may not indicate a government spending greater than the tax receipts. If a government is spending more than its receipts, then the government must borrow from someone by issuing bonds. If those bonds are purchased by foreigners as part of the balancing of a current account deficit, then foreign lenders are, in fact, helping to finance a domestic government deficit. This is what happened in the U.S. in the first half of the 1980's.

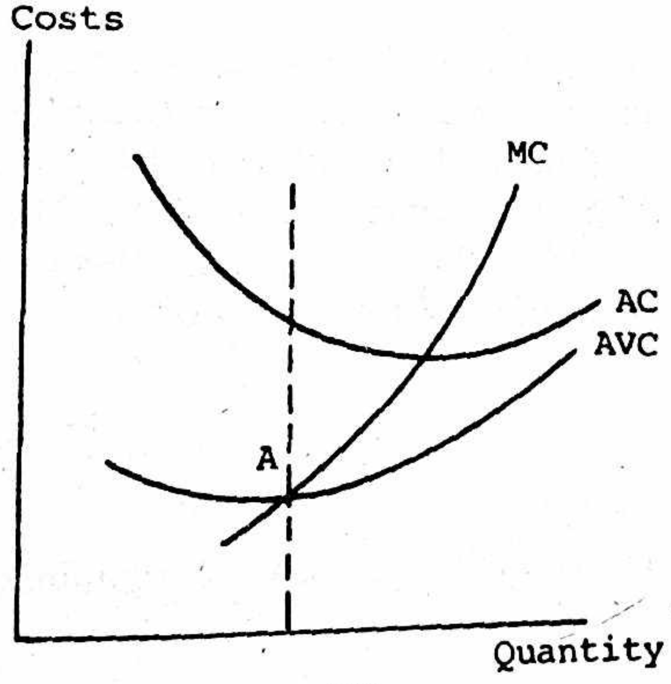
24. (A)

Investment has three major components: residential fixed investment, nonresidential fixed investment and inventories. Nonresidential investment is the largest of the three in the U.S. as well as most developed economies, but inventories are the most sensitive to changes in the economic climate. The cost of carrying inventories is the cost of not carrying money (or borrowing money); i.e. it is the real rate of interest. Inventories are therefore extremely sensitive to changes in the interest rate. They are also sensitive to the aggregate demand, because inventories are the first to reflect excess demand or excess supply. A turn to recession, foretold as usual by an upturn in real interest rates, causes inventories to increase just when they are most expensive. It is no surprise that a quick production response (a contraction) is usually observed.

25. (E)

Capital deepening is implied under either theory when the rental price is lower than the marginal monetary return of "hiring" one more unit of capital. Hiring that one more unit reduces the marginal productivity of capital, however, so the marginal benefit of capital is falling toward its rental price. Capital (and any input, for that matter) should be laid off if its marginal benefit increases with that action. All of the answers have the marginal benefit number moving in the wrong direction.

Figure A7



26. (E)

(Refer to Figure A7). Average variable cost intersects marginal cost at its minimum (point A), but to the left of the minimum of the average cost curve. Average variable cost is less than marginal cost only to the right of point A. Average cost (per unit total cost) can therefore be rising, falling, or constant when average variable cost is less than marginal cost. The only statement that "must" be true to the right of Point A is that average variable cost must be rising.

27. (A)

One of the advantages of the corporate form of organization is limited liability. In a case of criminal liability, corporate executives and partners can be prosecuted personally if they have lead their company to break the law, but the liability of shareholders and bondholders is limited to the money that they have invested. Should the crime be serious, the corporation might fail, and bond holders would be paid

first, followed by holders of preferred stock, etc., until the assets ran out. A less serious crime might simply be reflected in the price of the stock.

28. (D)

Value added is the difference between the value of the final product and the value of the material products that were used in production. In this case, it is $40,000 minus the cost of steel ($1000), the cost of energy and other material ($5000) and the cost of plastic ($10,000); it equals $24,000. Value added is, in this case, distributed between rent ($5000), labor ($10,000) and profit ($9000) [= $24,000].

29. (B)

Disposable income is equal to personal income minus income taxes;

since income taxes were $435 billion, PI>DI. Meanwhile, personal income equals national income minus social insurance contributions (–$306 billion) minus corporate retained earnings (–$207 billion) plus nonbusiness interest (+$150 billion) plus transfer payments (+$417 billion). Since [$150+$417], the positive increment, is greater than [$306+$207], the negative increment, PI>NI. Note, too, that NI>DI because income taxes are larger than the difference between PI and NI. As a result, therefore, it must be that PI>NI>DI.

30. (A)

As long as depreciation causes the existing stock to shrink from year to year, capital growth must cover both this depreciation and the desired increase in the capital stock. If the capital stock is always 3 times the level of GNP, then any change in GNP from one year to the next must be associated with (1) an increase in the capital stock equal to 3 times that change and (2) an extra amount to replace the portion of the existing stock that has depreciated.

31. (C)

Net investment equals gross investment (total expenditure on capital) minus depreciation. Total expenditure can be, at worst, zero, so gross investment must be nonnegative. Net investment can, however, be either postive or negative or zero depending upon whether gross investment is larger, smaller, or equal to depreciation.

32. (C)

Total cost is available by adding the marginal cost figures provided in the table. By doing that calculation and dividing by 7 units, $31 is obtained.

33. (C)

The minimum of the average cost curve occurs where marginal cost equals average cost. The average cost of 6 units is $30, the marginal cost figure recorded in the table. Alternatively, successive calculations for outputs greater than the minimum of the marginal cost figures recorded in the table give the same answer.

34. (B)

An increase in exports of $5 billion reduces capital account borrowing from abroad by the same $5 billion. Since that works just like an increase in the money supply (because it represents dollars that do not leave the country), it can be balanced, *ceteris paribus*, by any reduction in domestic bond issues and/or money supply equaling to $5 billion.

35. (C)

The producer price index measures the price level of raw materials and other inputs used in the production of final consumer goods. Any increase in the PPI should therefore work its way into the prices of final goods – the prices captured in the consumer price index – in a short period of time. There is no *a priori* reason to believe that an increase in the PPI should be followed shortly and automatically by a reduction; in fact, just the opposite might occur as producer prices affect the prices of other intermediate goods higher on the ladder of vertical integration. Cost of living adjustments might be expected over the medium term, but not immediately; most COLAs are targeted to movement in last year's CPI.

36. (C)

Pareto improvements are represented by points for which the utility of at least one person is increased without reducing the utility of the other person. The quadrant shaded in Figure A8, including the boundary, is therefore the region of Pareto potential improvement. Points D, E, F, and G lie in that region. Point E, however, lies outside the utility frontier, so it is not a feasible alternative to point A.

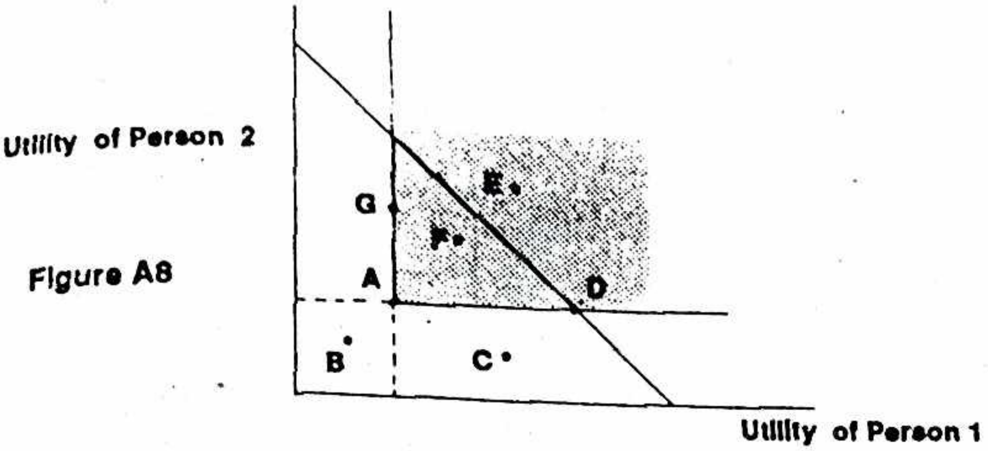

Utility of Person 2
G
A
B
C
E
F
D
Utility of Person 1

Figure A8

37. (D)
It can be argued that the market value of a firm should equal the value of its capital stock. If the value of the capital stock falls short of the market value, then that market value can be preserved for stockholders in the long run only by increasing the value of the firm's capital stock. New investment might therefore be undertaken even if the price of capital has risen. Basically, the situation described is one of disequilibrium, and only answer (D) provides a scenario that might restore equilibrium.

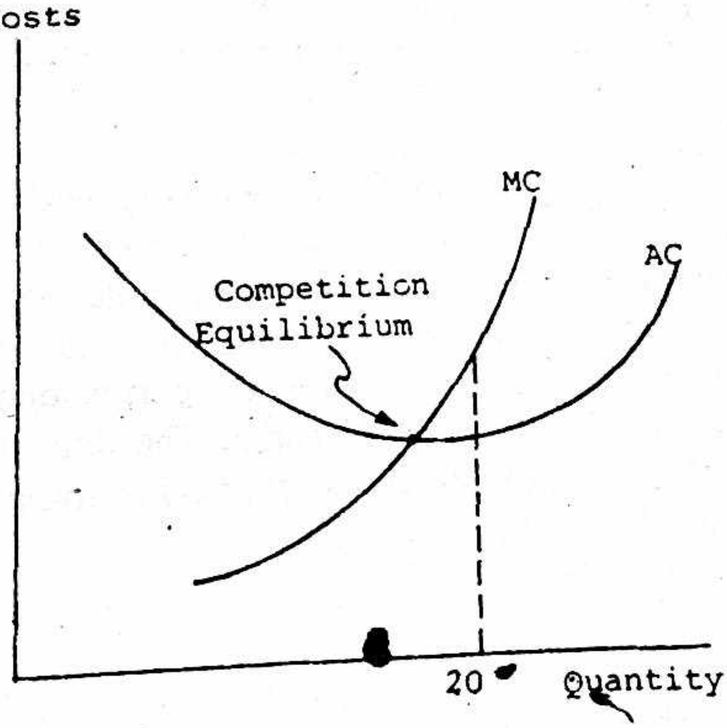

Costs
MC
AC
Competition Equilibrium
20
Quantity

Figure A9

38. (C)
(Consult Figure A9). Marginal cost exceeds average cost to the right of the minimum of the average cost curve. Competitive equilibrium occurs at the minimum of the average cost curve. If 20 units corresponds to MC>AC, then competitive equilibrium must correspond to an output less than 20 units.

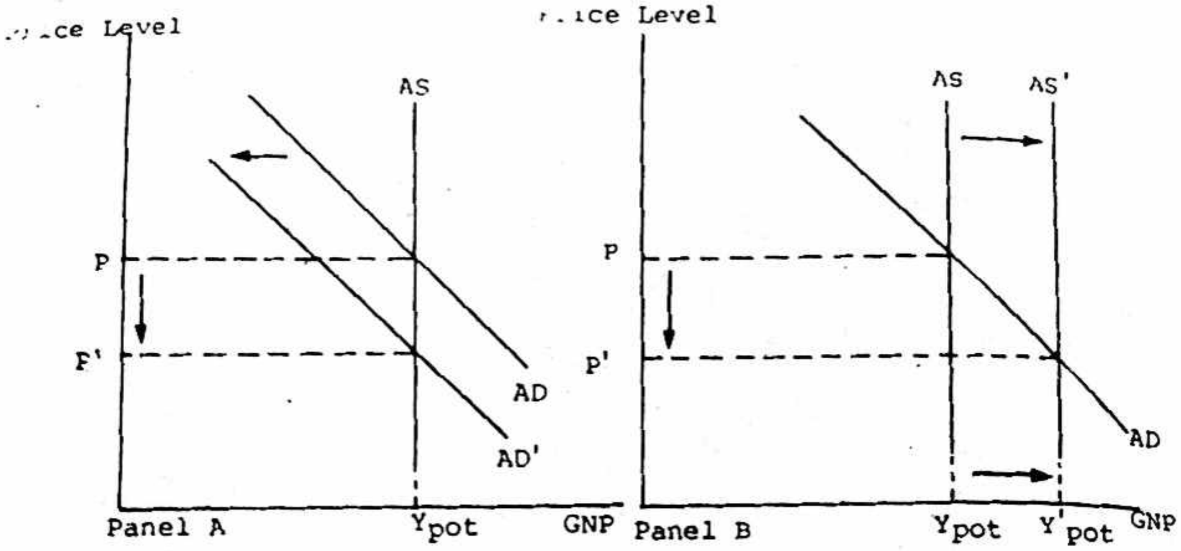


Figure A10

39. (E)

With perfectly flexible prices, the aggregate supply schedule is vertical above a potential GNP. Any change in aggregate demand (e.g., the decrease shown in Panel A of Figure A10 from AD to AD') results only in a corresponding change in the price level (a reduction from P to P' in Panel A) with output being held fixed at a potential GNP; so, there is no recession. (An increase in the aggregate demand creates the opposite potential for a boom, but again only prices move). Increases in either the number of people available to work or the capital stock, increase a potential GNP, but (as shown in Panel B of Figure A10), that results in lower prices, not unemployed resources.

40. (C)

Okun's Law suggests that every percentage point that unemployment runs above the natural rate over the course of a year corresponds to GNP running 3 percentage points below potential. The sum of the differences between the natural rate and the actual rate of unemployment given in the question is 9%; the corresponding loss in GNP should therefore be 27% of potential. The data provided here are roughly accurate. The total loss, measured in current dollars, probably exceeded $450 billion.

41. (A)

A constant share of GNP paid to labor implies that the real wage paid to labor has been maintained, even though the size of the labor force has been increasing. Since an increase in the labor force should have resulted in a reduction in the marginal product of labor, a general increase in labor productivity caused by technological innovation and capital deepening must have occurred simultaneously. Since labor's share has been stable, its contributions to inflation and international trade instability must have been nil. Finally, real wages did not soar in the 1970's.

42. (E)

All of the indicated policies can stimulate investment, the first three through tax policy itself. If credits against tax liabilities that are earned only by investing are increased, then investment should increase. If investments are financed by borrowing (always an option), allowing interest rate deductions from taxable income to lower taxes and thus lower the cost of borrowing for investment, then the cost of investment falls and investment should increase. Allowing depreciation tax-write-offs earlier rather than later works the same way through the tax codes to reduce the cost of investment. Lower interest rates, finally, reduce the cost of borrowing for investment directly.

43. (B)

This is a matter of record.

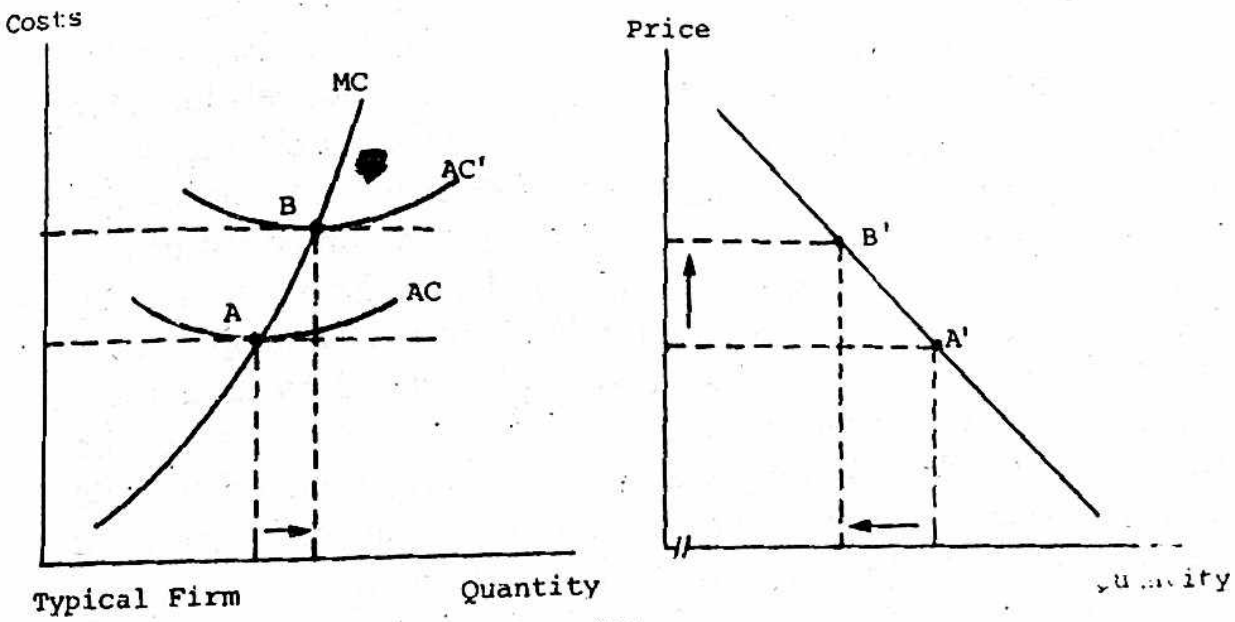


Figure A11

44. (A)

Consult Figure A11. Any change in fixed cost does not affect marginal cost, but it does increase average cost. The average cost schedule of the typical firm must, therefore, move from AC to something like AC' in response to a tax that increases fixed costs. Long run equilibrium for the individual firms must therefore move from point A to point B so that the price equals the minimum of the new average cost curve at a higher output. Since the total quantity demanded must fall with a higher price, a smaller number of firms will survive the tax.

45. (B)

From Panel a, it is clear that the equilibrium price must be \$10, the minimum of the average cost curve. Given that price, Panel a also reveals that each firm should produce 10 units of output. Panel b, meanwhile, shows that 1000 units are demanded when the price is \$10. 100 [= (1000/10)] firms are therefore required.

46. (A)

The unemployment rate is computed as

$$\frac{\text{\# people unemployed}}{(\text{\# of people unemployed}) + (\text{\# of people employed})} \times 100\%$$

where the number of people unemployed have to satisfy certain eligibility criteria. One criterion is that the individual actively looks for work – i.e. is a part of the labor force. Should an unemployed person become discouraged and no longer participate in the labor force, that person is no longer unemployed. So, even if the number of people employed were to fall (thereby reducing the denominator and creating the likelihood that the rate will increase), the rate of unemployment could fall if the number of people unemployed fell by an amount sufficient to cause a reduction in the numerator that outdistanced the reduction in the denominator. Answers (B) and (C) mention possible counterbalancing changes in functional and cyclical components, but their effects would be caught in the initial - 1% reduction.

47. (D)

These are facts of history and the result of asymmetry in the market pressure. There are, in fact, sectors of the U.S. economy for which 100% capacity utilization and excessively high labor employment would necessarily imply overheating elsewhere in the economy with its associated high rate of inflation.

48. (C)

To answer this question, it is first necessary to solve for equilibrium; i.e., it is necessary to compute Y^* such that $C+I+G = Y^*$. With the figures given, the equation defining Y^* is:

$$-100 + .64Y^* + 200 + 800 = Y^*;$$

as a result, $Y^* = \$2{,}500$ with tax revenue set at \$500. Moving toward a balanced budget by increasing taxes and reducing government spending would then move GNP below the initial Y^* because both would retard economic activity.

49. (A)

All three components of investment are sensitive to different degrees and significance, to changes in the interest rate. The reasons provided in answers (B), (C), and (D) are the opposite; irrationality is not required to explain the sensitivity.

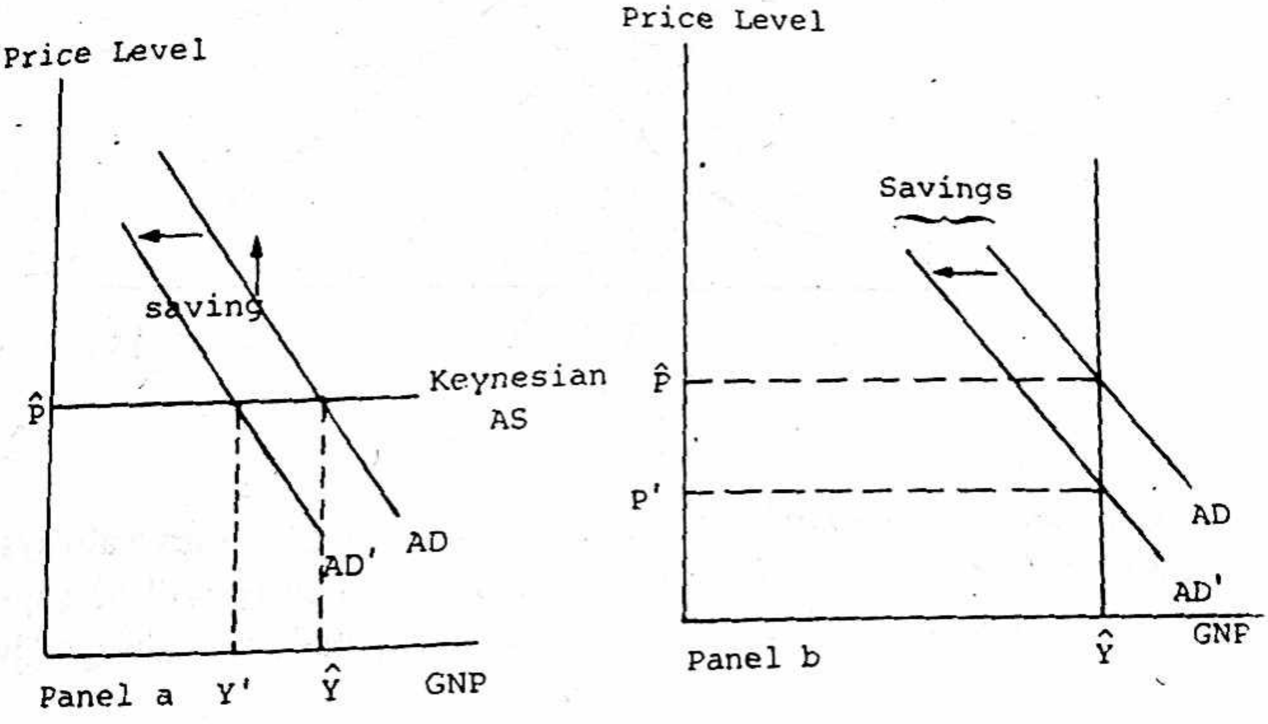


Figure A12

50. (C)

The paradox of saving is a Keynesian concern. Consult Figure A12. In Panel a, the neo Keynesian world is shown with aggregate supply showing some slope (a pure Keynesian world would show an AS curve running horizontally across the graph). The paradox of saving envisions an economy suddenly saving more for posterity. The paradox is that current GNP may then fall. This is seen in Panel a when aggregate demand shifts from AD to the lower AD' (saving up implies that consumption and thus aggregate demand = C+I+G falls). Notice that GNP falls from Y (potential GNP) to Y'. In the classical world shown in Panel b the increase in saving causes only a reduction in prices from P to P'.

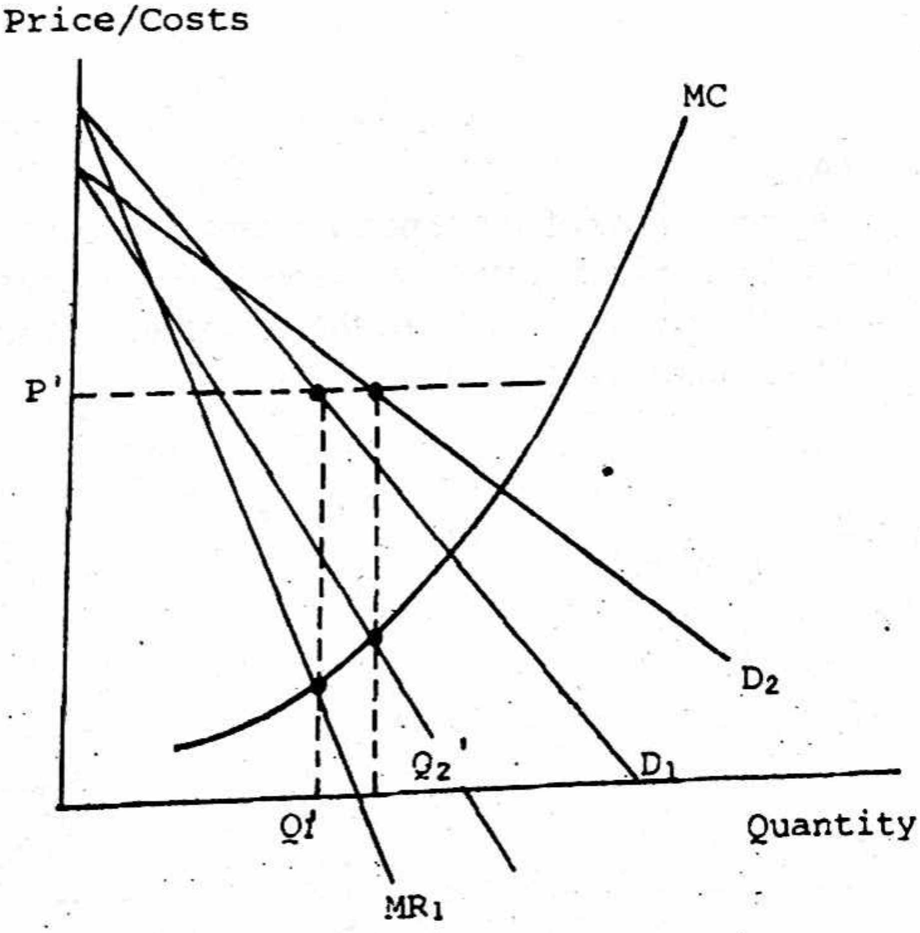


Figure A13

51. (E)

A monopolist does not have a supply curve. A supply curve always answers the question: "Given the price, what quantity will be supplied?" For a monopolist, the answer to that question is always "It depends on the demand curve." Figure A13 shows two demand structures with the same marginal cost curve for the monopolist, for which a different quantity is supplied even though the same price maximizes profits (i.e. sets marginal revenue equal to marginal cost).

52. (E)

The major source of revenue for the United States government is the personal income tax.

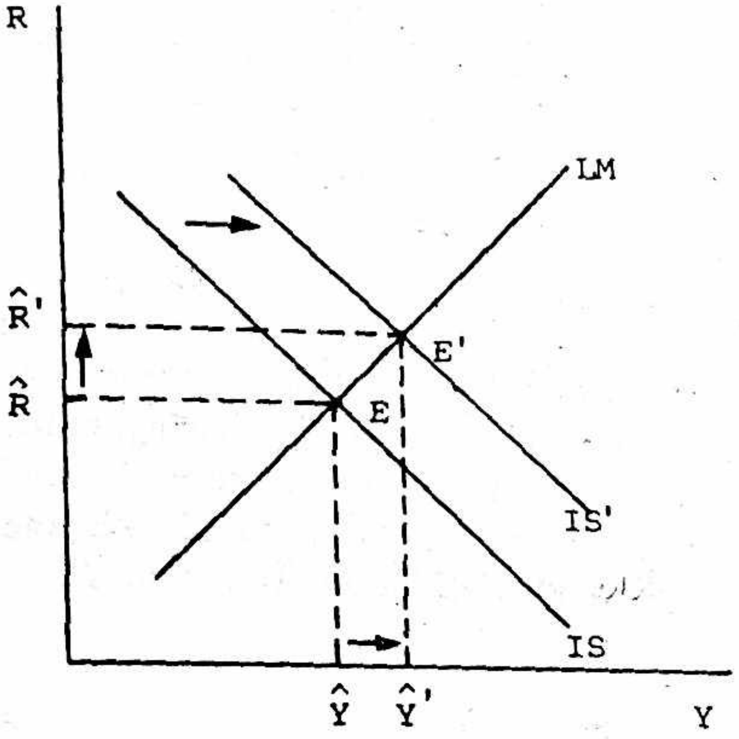


Figure A14

53. (A)

An increase in government spending is reflected by a rightward shift in the IS schedule. Equilibrium should therefore be expected to move up the LM curve to the right to support both a higher interest rate and a higher level of economic activity. The shift from IS to IS' in Figure A14 shows this with equilibrium moving from E to E', the interest rate climbing from R to R' and GNP rising from Y to Y'.

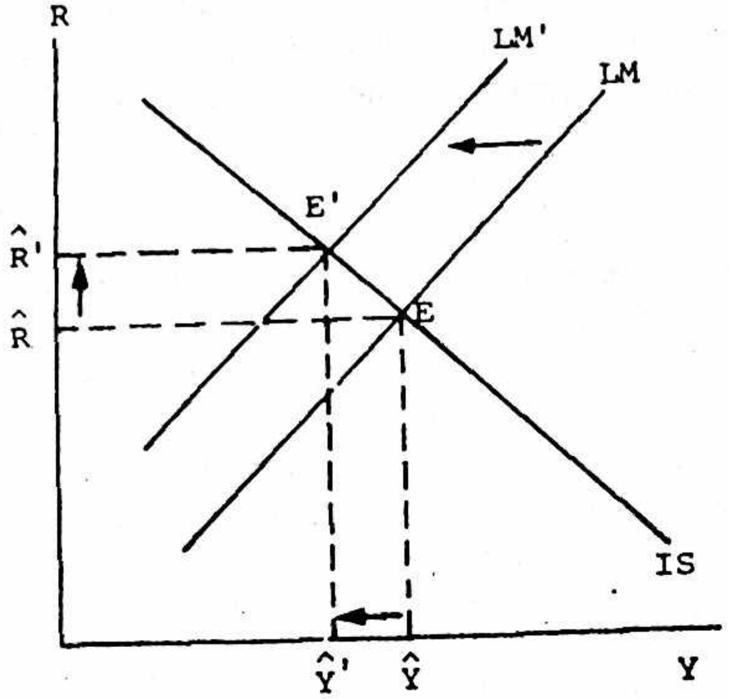


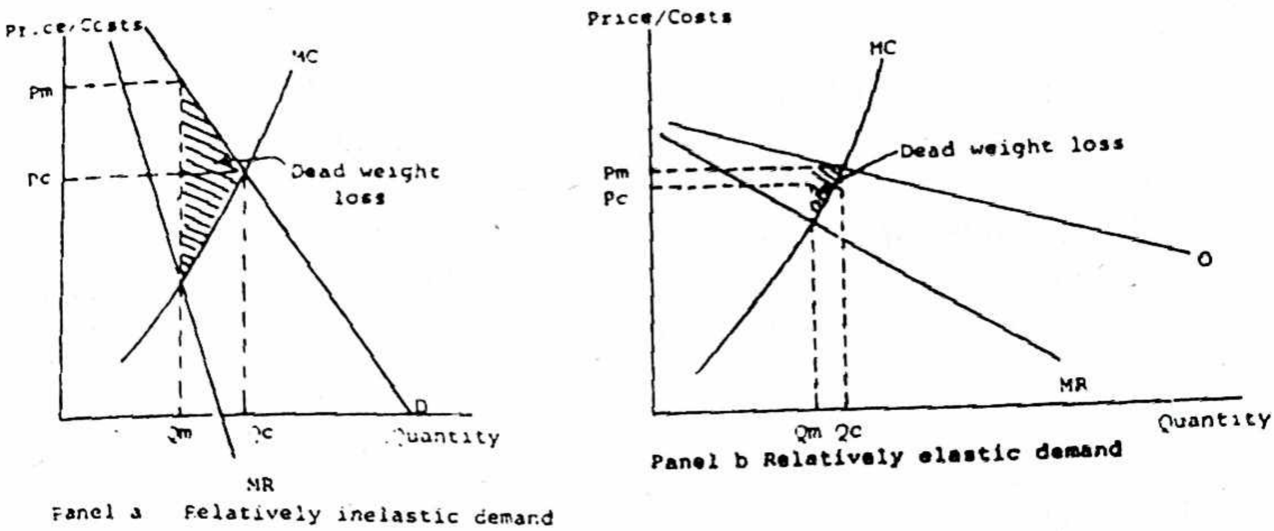
Figure A15

54. (D)

An increase in the price level functions just like a reduction in the real money supply, so the LM curve shifts up and to the left. Equilibrium therefore, moves along the IS curve to support a higher interest rate but a lower level of economic activity. A shift from LM to LM' in Figure A15 shows this with equilibrium moving from E to E', the interest rate climbing from $\hat{R}$ to $\hat{R}'$, and GNP falling from $\hat{Y}$ to $\hat{Y}'$.

55. (E)

A tax on cigarettes, a proportional sales tax, and a highway user tax cannot be examples of taxes founded on an ability to pay because everyone who buys a pack of cigarettes, or any other item, or uses a highway must pay these taxes regardless of their ability to do so. Of the remaining two choices, the personal income tax is the better choice. Its progressive nature reflects, at least to a small degree, the notion that wealthier individuals should be able to pay more for the governmental services that they enjoy. The corporate tax is more distorted with expenditures and is therefore less responsive to a notion of "ability to pay."



Panel a Relatively inelastic demand

Panel b Relatively elastic demand

Figure A16

56. (C)

As shown in Figure A16, the greater the elasticity of demand, the smaller the potential welfare loss attributable to the market power of a monopolist. Welfare loss is, in Figure A16, indicated by a loss in consumer surplus between the monopoly solution (MR=MC) and the competitive solution (MC=P). The notion makes intuitive sense, though, because it is the horizontal demand curve faced by the competitive firm that takes away the discretionary power over price, the power exploited by a monopolist. Total output and the number of firms are irrelevant because they depend upon the size of the potential market. The idea of a natural monopoly is, in fact, derived from the idea that some markets might be best served by a single firm.

57. (D)

Antitrust legislation is designed to diminish market power and thus to break down or remove barriers to entry. Import quotas can, on the other hand, protect an imperfect competitor from outside competition – they act as barriers to that competition. Patent laws provide time-dependent monopoly power and are, themselves, barriers to entry. So, too, are governmentally determined franchises. Environmental regulations can represent an added cost of entry into a market that a potential competitor must pay; they can discourage such a competitor and function as a barrier to entry.

58. (E)

Net exports for the U.S. were usually negative for the decades of the 1950's, 60's, and 70's, but not by much (in percentage terms and not without an occasional year of small surplus). After 1981, however, high U.S. interest rates drove the value of the dollar up to create enormous deficits. Late in 1984, the U.S. became a debtor nation; it is now the world's largest debtor nation.

59. (C)

The prices that Europeans pay for U.S. goods can fluctuate even while U.S. prices hold stable, because of variation in exchange rates. Europeans purchase U.S. goods with dollars, which means that they must first purchase dollars. Since the exchange rate to obtain dollars varies from day to day, the European price of American goods can vary from day to day.

60. (C)

The Phillips curve relation asserts that inflation should be positively correlated with the difference between actual and potential GNP; e.g., should actual GNP climb above (fall below) potential GNP, then inflation should accelerate (decline). Since the unemployment rate increases (decreases) as actual GNP falls (increases) relative to potential, a negative correlation between the unemployment and inflation rates should be expected.

61. (A)

Records and history show that the privatization of anti-trust enforcement has lead to an increase in the number of anti-trust cases. The other options have not been observed. Awards in anti-trust cases have not diminished. Government subsidization is down in some industries, but not in others. Mega-mergers have occurred for other reasons, and collusion is still illegal.

62. (C)

The Phillips curve relationship is, according to the parameters of the question,

$$\pi_t = \pi_{t-1} + .33[(Y_{t-1} - Y^*) / Y^*].$$

where π_t equals the rate of inflation in year t. A reduction of inflation of 2 points therefore requires that actual GNP fall 6 points below potential. Applying Okun's Law (each percentage point of unemployment above the natural rate corresponds to actual GNP falling 3 points below potential GNP), the corresponding rate of unemployment must be 2 percentage points above the given 6%; i.e., it must be 8%.

63. (C)

The depreciation of the dollar would tend to push exports up (domestic goods become more expensive abroad). Domestic price inflation (domestic goods become relatively more expensive) and higher real domestic income (domestic demand for domestic and foreign goods should increase) would tend to push net exports down. You might expect exports to fall (2 effects to 1), but you would not be certain.

64. (B)

The appropriate Phillips curve relationship, given the parameters of the question, is

$$\pi = .4[(Y_{t-1} - Y^*)/Y^*]$$

where π is the rate of inflation. A reduction in the unemployment rate of 1 percentage point below the natural rate, corresponds, according to Okun's Law, with actual GNP 3% higher than potential. Inflation should therefore increase by 1.2 percentage points (.4x3%), but only for one year. Without an expectations term in the Phillips curve, inflationary pressure associated with low unemployment should disappear when unemployment returns to the natural rate.

65. (A)

The increase in government spending exactly offsets the reduction in exports in the first year, so nothing happens. In the second year, though, the export reduction hits with full force (as it would have in year 1 without the policy adjustment). Unless all of this is foreseen by the economy as a whole, all the consequences of the export reduction are simply postponed for one year. The monetizing effects are neutralized by adjustments in the capital account that look just like adjustments in monetary instruments.

66. (D)

The present value calculation requires that you discount future income by one plus a market rate of interest for the time increment being considered. With an annual interest rate r (x100%), then, \$1000 in one year's time is presently worth [\$1000/(1+r)]. Why? Because you could put [\$1000/(1+r)] in the bank for a year and earn r[\$1000/(1+r)] in interest. That combined with the principal, would equal the anticipated \$1000. Meanwhile \$1000 in two years' time would be worth [\$1000/(1+r)2] in present value for the same reason taken forward one more year. For the 11% cited in the question, the present value of \$1000 in one year's time is

$$[\$1000/(1+.11)] \approx [\$1000/(10/9)] = \$900.$$

67. (B)

When r approaches 0, the CES function provided becomes Cobb-Douglas. In a Cobb-Douglas technology, the share of output paid to any input is constant.

68. (C)

The CES function listed displays constant returns to scale. In the long run, therefore, average cost equals marginal cost equals the cost of producing the first unit, as long as input prices are fixed. Total costs must be represented by a straight line from the origin, with a constant slope equal to that first unit cost; i.e. costs must increase at a constant rate.

69. (A)

As r nears unity, the elasticity of substitution approaches infinity and therefore the isoquants must become straight lines.

70. (D)

If labor is paid its marginal revenue product, then the derived demand for labor for the specified CES schedule is

$$[w/p] = (1\text{-}b)\,[L/Y]^{r-1}.$$

Taking the natural log of both sides,

$$\ln\{w/p\} = \ln\{1-b\} + (r-1)\ln\{L/Y\}.$$

The estimate for β is thus an estimate for $(r-1) = 1/\sigma$.

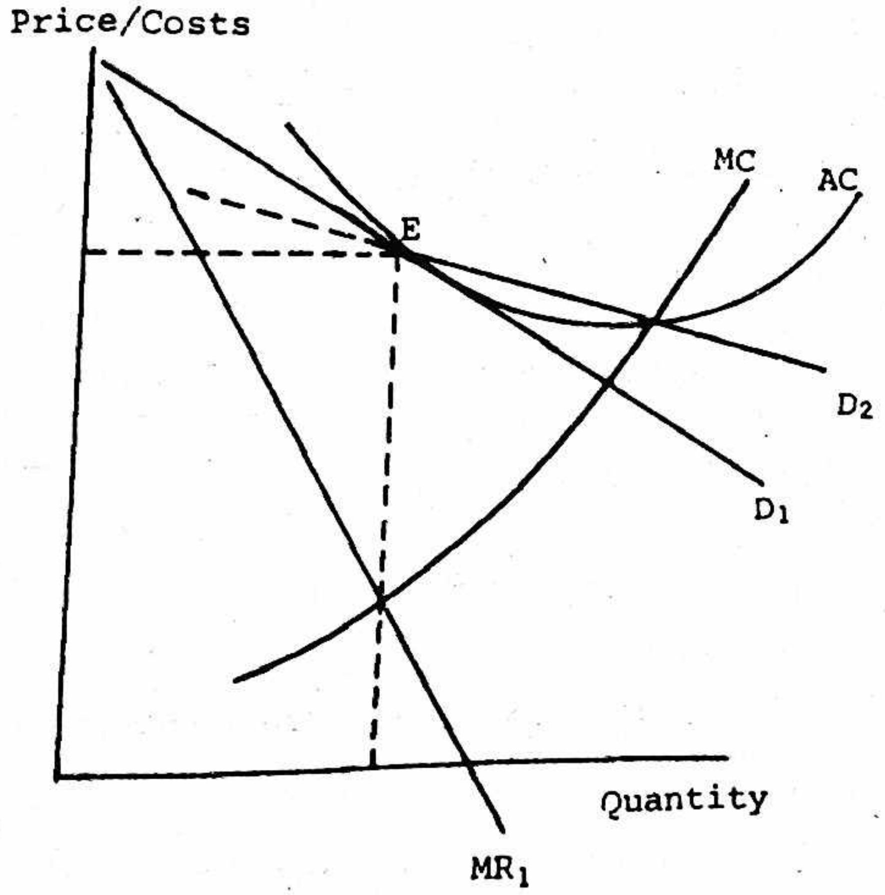


Figure A17

71. (C)

The decision to increase (or decrease) output is a marginal one. If price is greater than marginal cost, then the sale of one more unit of output may net more revenue than it will cost. The one possible problem occurs when price falls sufficiently with the increase in quantity demanded to cause marginal revenue (the increase in total revenue attributable to the sale of one more unit) to fall below marginal cost. Figure A17 shows a monopolistic competitor in equilibrium against a demand curve that assumes that all other competitors will follow any change in price. Notice that profits are zero and MC=MR. If other firms would not follow, though, then a reduction in price would increase sales dramatically and profits would increase – demand curve D2 shows this by (1) being flatter through original equilibrium at point A, and (2) running above average cost for higher outputs so that P>AC and profits are positive. The desire to increase output is clear.

72. (C)

Since marginal cost equals average cost at $8 with 10,000 units of output, that must be the long run equilibrium for the firm described in the question. The only question is how the market will lead the firm to that price and output combination. At the $10 price, the firm is making positive economic profit even at 10,000 units, so its initial reaction should be to increase output slightly to achieve an equality of marginal cost and price and thereby maximize profits. Meanwhile, even the $20,000 initial economic profit earned before that adjustment should attract new firms to the market and drive the price down. Equilibrium will be achieved in the long run when pure economic profits are completely eroded by the new firms, and price will equal average cost which will equal marginal cost which will equal $8 for our firm at 10,000 units of output.

73. (A)

In October of 1979, the Federal Reserve Board changed the aim of its monetary policy decisions from trying to maintain stability in interest rates to trying to hit prescribed rates of growth in the money supply. As a result, both real and nominal interest rates became very sensitive to changes in aggregate demand, aggregate supply, and the demand for money. They both, therefore, became far more volatile and difficult to predict.

74. (E)

Running expansionary fiscal policy against contractionary monetary policy certainly increases interest rates; simple IS–LM analysis shows this with the IS curve shifting right and the LM curve shifting left. With interest rates high, the ability of monetary policy to slow an economy by increasing interest rates is diminished; most investment projects are already on the shelf. The likelihood is that the depression in investment caused by the high interest rates dominates the fiscal expansion, and recession results. With all of the contraction in place, price inflation stops abruptly. This is what occurred in 1981 and 1982.

75. (C)

The key here is to think about keeping the LM curve fixed. If the demand for money increases, then an increase in the supply of money can maintain the locus of points for which the quantity of money demanded equals the quantity of money supplied. And if the LM curve does not shift, then GNP and interest rates should be unaffected. A reduction in the supply of money represents a response in the wrong direction. Changes in government spending change the IS curve. An increase in the money supply requires no complementary adjustment in taxes if the LM curve is fixed; that failing, maintaining both GNP and interest rates is impossible with anything that moves the IS curve.

76. (D)

The possible result of the increase in consumption is expansionary – a shift in the IS curve to the right and up. The requisite policy response is therefore contraction; only answer (D) gives an unambiguous policy prescription in the correct direction.

77. (C)

Price stability is easy to describe theoretically, particularly in the short run (e.g., pricing decisions made quarterly by firms); and it may or may not be a long term phenomenon depending upon circumstance and context. Substitution is never an issue in the short run. The only possible answer, therefore, refers to the sensitivity of demand to changes in price; particularly in the short run before people have time to explore their options, the quantity demand may be quite insensitive to price. Short run demand can, in more economic terms, be quite inelastic. Purchasing power parity depends, meanwhile, on all sorts of market adjustments, (including response to price), occurring quickly if it is to apply to the short run.

78. (B)

The appropriate Phillips curve relationship is, according to the parameters specified in the question,

$$\pi_t = \pi_{t-1} + f\{ (Y_{t-1} - Y^*) / Y^* \}.$$

where π_t is inflation in year t, etc. If prices were to suddenly jump 5%, then this relationship would perpetuate the 5% through the π_{t-1} term unless the $f\{(Y_{t-1} - Y^*)/Y^*\}$ term came into play. The only way that it could help would be for actual GNP to fall short of potential.

79. (A)

The effectiveness of monetary policy to manipulate GNP depends upon the slope of the IS curve; in a simple model, it depends upon the sensitivity of investment to changes in the interest rate. When the IS curve is steepest, investment is least sensitive to changes in the interest rate, and monetary policy is least effective.

80. (A)

Fiscal policy is most effective when (1) investment is least sensitive to changes in the interest rate (the IS curve is most vertical) and (2) the demand for money is most sensitive to changes in the interest rate (the LM curve is most horizontal). Comparing the panels, only (a) fits the bill.

81. (D)

We need steep LM and IS curves (i.e. insensitive investment to changes in the interest rate and sensitive demand for money to changes in the interest rate). Panel (d) fits the bill.

82. (C)

The short run, in terms of a macroeconomic consumption function, is best estimated in terms of how people adjust their consumption in response to yearly changes in their incomes. Critical here, is their interpretation of the change as either permanent or temporary. In any case, measurement of the short run marginal propensity to consume depends upon capturing people's reaction to changes in their yearly income. Since marginal consumption is expressed in terms of change in consumption per unit of change in income, a straight line regression equation works best.

83. (E)

In a dominant firm model, firms in the competitive fringe are price takers that stay in business as long as pure economic profits are non-negative. In the long run with a stable market, one might expect zero pure economic profit, but certainly not negative pure economic profit. Just as in perfect competition, negative pure economic profit implies that firms should and would leave the market.

84. (B)

Suppose that \$B are borrowed in the first of two years in which anticipated income is \$Y. Consumption in the first year would therefore be $C_1 = [Y + B]$. Suppose further that the loan principle and interest are to be paid in the second year. If the rate of interest is r, then consumption in the second year would be $C_2 = Y - B - rB$; both principle and interest must be subtracted in the year that they are paid.

85. (C)

As consumption gets more sensitive to changes in the interest rate, the sensitivity of the level of GNP that matches aggregate supply with aggregate demand (including consumption) increases. A small reduction in the interest rate can, therefore, be expected to increase consumption dramatically and thus increase equilibrium GNP. The IS curve must, therefore, reflect that sensitivity by being flatter. Against a flat IS curve, monetary policy is extremely effective because interest rate movements (for example, increases, e.g., for a monetary contraction) do not have to be very large to inspire relatively large output reactions.

86. (E)

Marginal costs reflect the extra cost that must be paid when output is increased; they depend, therefore, only on variable costs and not on fixed costs. In this example, the higher taxes must be paid regardless of what level of output is produced. As a result, the cost of increasing output from any level is unaffected and the marginal cost schedule should not move at all. Recall that the average cost curve shifts up and to the right along the fixed marginal cost schedule because average fixed costs increase for each and every level of output.

87. (C)

These estimates are a matter of well established record. Although, it should be clear that the short run propensity should be smaller than the long run propensity. Why? Because people spend a smaller fraction of a temporary increase in income in the short run than they do in the long run. Only answer (C) has the correct correspondence of size of estimate and time frame (and has estimates, less than unity,as is essential in measuring a marginal propensity to consume).

88. (B)

This is the classical situation that produces U-shaped average costs; average fixed costs fall with output, and average variable costs increase with output, in response to diminishing returns to the variable factors. The average fixed cost effect dominates for small outputs, but the variable cost effect eventually dominates for higher outputs. Constant returns to scale do produce constant average costs, but only in the long run when all factors of production can be adjusted simultaneously (and proportionately). Average costs fall if and only if they are less than marginal cost.

89. (D)

A competitive firm maximizes profits when the given price equals marginal cost (when marginal costs are upward sloping). It will accept those maximum profits and continue to operate in the short run as long as the price covers average variable cost. If that is not the case, the firm loses money above and beyond fixed costs for each unit of output it produces, and it should decide to produce nothing. So, for prices less than the minimum of average variable cost, the quantity supplied is zero; for prices above that minimum, the quantity supplied is read from the marginal cost curve.

90. (B)

If purchasing power parity operates in both the short run and the long run, then changes in the exchange rate immediately neutralize changes in relative prices. Net exports can therefore move in response only to changes in real income.

91. (A)

Changes in exchange rates over the past few years have been explained very well by the changes in real interest rates. When, for example, U.S. real interest rates were very high in the early 1980's, U.S. assets attracted a lot of attention from foreign investors. To purchase U.S. assets, though, they had to first purchase U.S. dollars. High U.S. rates created a high demand for U.S. dollars (even while a net export deficit created a large supply of U.S. dollars because U.S. citizens needed foreign currency to import more), and thus, a high price for the dollar.

92. (D)

Twenty-five years of a permanent increase in income could be consumed, even given zero interest rates, over the course of 35 years (25 years of working and 10 years of retirement without working) by spending 71% (25/35) of the increase in each working year (including the first). With the positive real interest rate, any savings will earn a return and add to total lifetime wealth, allowing slightly more than 71% to be consumed each year. The marginal propensity to consume should therefore be something slightly over .71, with the degree of hedging dependent formally on the real interest rate.

93. (B)

A new invention is protected by patent laws for a fixed amount of time–generally 17 years. During that period of time, the inventor has a monopoly on the production of the invention, and may therefore be able to extort some monopoly profit from the market. That possibility is legal, but it is also short-lived. As soon as the patent protection expires, competitors should be attracted to the positive profits, enter the market, drive the price down, and reduce pure economic profit toward zero.

94. (A)

The major efficiency concern in a system of income redistribution is that the most productive members of society who earn the most income must also pay the most in taxes to fund the system. If these taxes are distortionary, as almost all taxes are, they can be expected to provide disincentives to work. In effect, they reduce the opportunity cost of leisure and lead to the possibility that the most productive citizens will work less. If that occurs, total output can be expected to decline.

95. (A)

The severe recession of the early 1980s hastened an increase in the variance of the distribution of income that traces its foundation to (1) the decline in the absolute comparative advantage of U.S. manufacturing, (2) the growth of the U.S. service industries, and perhaps most importantly (3) a dramatic change in the welfare system – safety net philosophy of U.S. domestic policy. Before 1980, the notion was to protect all who needed protecting even if a lot of "welfare cheaters" were also paid; after 1981, the notion was to avoid paying cheaters even if some deserving people and families were denied assistance. The result of these three trends was an increase in the percentage of families under the poverty line from roughly 11% in 1980 to more than 15% in 1983.

96. (D)

The labor supply has not been constricted over the last century; it has grown. Imperfect competition has had little differential effect on the overall return on capital. Interest rates are a measure of the return on capital, so their increase (were it observed) could not explain a constant return on capital. The only answer that could possibly explain why the return earned by a factor of production held constant even as employment of that factor increased is technological change. Of the choices provided, only technological change can make inputs (and thus capital) more productive and thereby balance the natural tendency for marginal productivity to fall with increased employment.

97. (B)

Current disposable income equivalent to permanent income implies, in its very statement, that all long-run decisions are being collapsed into shortsighted short-run decisions. Estimating the linear long and short consumption functions should therefore give the same estimates, the slope being the long- and short-run marginal propensities to consume.

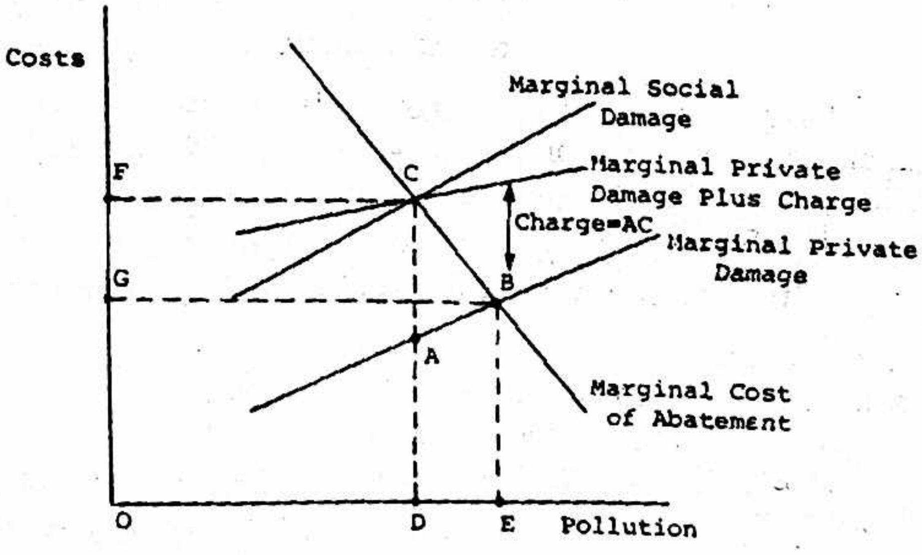


Figure A18

98. (D)

The optimal level of pollution is OD, so a pollution charge must bring marginal private damage (cost) in line with marginal social damage (cost) at that level. Figure A18 shows that a constant charge of AC would do the trick. It would make marginal private damage equal to DC at emissions OD, and optimality would be the result. Note that the "marginal private damage plus charge AC" matches the marginal social damage schedule only at point C, but that is all that is necessary unless the marginal cost of abatement is stochastic.

99. (D)

OE on Figure A18 would be emitted in the absence of any government intervention; that is where marginal private damage equals the marginal cost of abatement. Marginal social damage equals the marginal cost of abatement at the optimum OD. A reduction equal to length ED is therefore required.

100. (C)

The dominant problem displayed in the residuals is a dramatic break half way through the data; it suggests that something systematically and structurally different is driving the correlations captured in the two halves .This conjecture should be statistically investigated first, and a Quandt test is called for.

101. (B)

If public goods are provided, they enter each and everyone's utility function at the same quantity provided. In practice, goods that are classified as public goods are distinguished by two characteristics. First, they are provided publicly because the cost of their provision exceeds the private benefit that any one person (or small group of people) could hope to glean. Secondly, once provided, it is very expensive and inefficient to exclude one more person from enjoying their benefit because their "consumption" is entirely non-competitive.

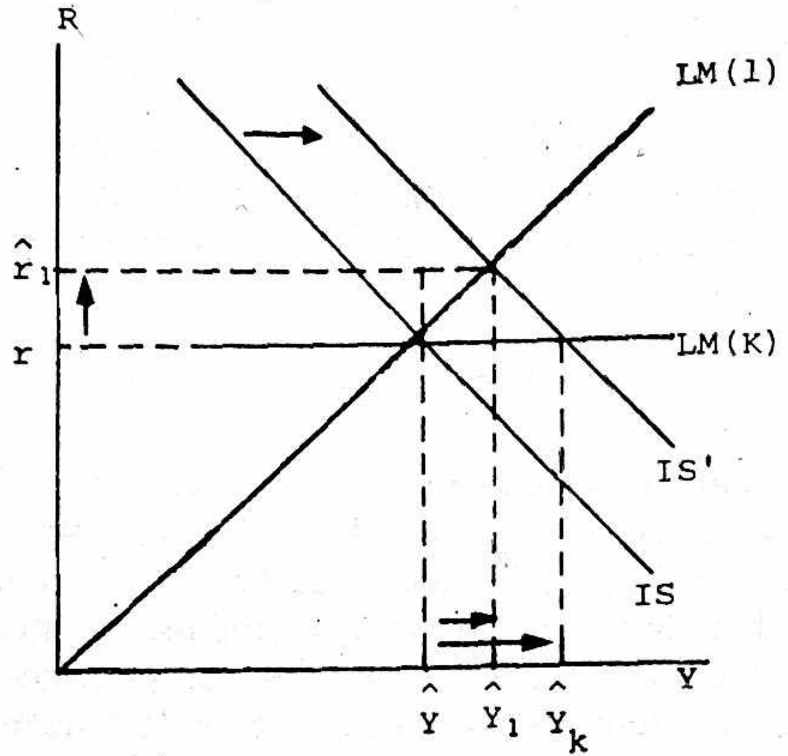
102. (A)

None of the taxes is entirely proportional. The social security tax is proportional up to a specified level of income above which the marginal tax rate falls to zero. The personal income tax is progressive even after tax reform. The corporate income tax is likewise progressive, particularly in its lower end. Finally, gift and estate and local property taxes begin with exclusions, and only come into play above specified limits.

103. (C)

The profit maximizing monopolist produces where marginal cost equals marginal revenue. Revenues are maximized where marginal revenue equals zero. As long as marginal costs are positive, therefore, the profit maximizing monopolist will produce less than the output at which the revenue is maximized. If, by some quirk of nature, marginal costs are zero, then the profit maximizing monopolist will, in fact, choose to produce an output that maximizes revenue. Marginal costs can never be negative, though, so the monopolist will never produce an output greater than the output that would maximize revenue.

Figure A19



104. (D)

The geometry of the situation is shown in Figure A19. There, LM(1) has some slope while LM(K) does not; LM(K) is the Keynesian case where interest rates do not move with fiscal policy and the usual multiplier effect is felt. An increase in government spending shifts the IS curve up and to the right. Against LM(K), the full multiplier effect is seen. Against LM(1), though, a smaller output effect is noted $(\hat{Y}_1 < \hat{Y}_k)$. Why? Because the associated increase in the interest rate is expected to diminish investment and therefore diminish at least partially the stimulus of the increase in government spending.

105. (D)

With a log-likelihood function, moving 1 unit down the peak moves you 1 standard deviation away from the maximum likelihood estimate. The +/– range should therefore be found between –1 on the down side of 2 and +6 on the up side.

106. (A)

The sudden allocation of $100 in food stamps means that it is now possible to purchase $200 in other goods and $100 in food. That the stamps are not marketable means that $200 is the maximum amount of other goods that can be purchased; a maximum of $300 in food is, however, now possible. The new budget constraint should therefore be a line with a slope of (–1) drawn between (food=$100; other goods=$200) and (food=$300; other goods = $0).

107. (C)

If the new food stamps can be sold to anyone at any price, then their equilibrium price should equal their face value. The $100 influx of food stamps would therefore be the same as a cash influx of $100.

108. (B)

That marginal utility values for both goods have fallen indicates that the individual is consuming more of both goods after the change. Why? Because marginal utility declines with the increase in consumption. We know that the individual displays diminishing marginal utility, because the individual would be consuming only one good if his or her marginal utilities increased with consumption and the resulting indifference curves were convex. So, if more of everything is being consumed, the individual must be better off. The change must have involved an increase in income, a reduction in price, or both.

109. (C)

Nation A has a comparative advantage in the production of X and Nation B has a comparative advantage in the production of Z (even though A has an absolute advantage in the production of both X and Z). Why? Because the labor cost of X relative to Z is (1/3) in Nation A and (4/8) = (1/2) in Nation B. X is thus relatively cheaper to produce in Nation A. Similarly, the labor cost of Z relative to X is (3) in Nation A and (8/4) = (2) in Nation B, so Z is cheaper to produce in Nation B. Nation A should therefore export X and import Z; Nation B should do the opposite.

110. (A)

The price ratio in nation A before trade is (1/3); the price ratio in nation B before trade is (1/2). The price after trade should therefore be between .33 and .50; only .40 is correct.

111. (C)

The 2 point increase in U.S. interest rates makes U.S. assets more attractive to foreign investors. They divest of their own domestic assets to purchase U.S. assets. The result is a reduction in the price of those assets (demand has contracted), and thus an increase in the return that they pay. The new equilibrium is not 2% higher because the foreign influx has increased the price of U.S. assets a bit, and thus diminished the interest rate peak.

112. (D)

The share of GNP devoted to paying labor in the United States has been approximately 75% for most of the 20th century. Technological change has been attributed to maintaining this share; it is one of the remarkable statistical stabilities of the macro economy of the United States.

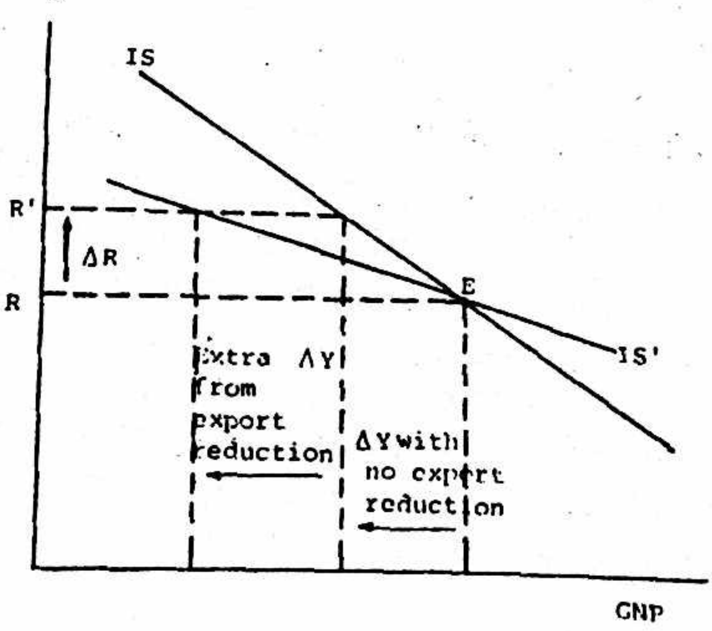


Figure 20

Figure A20

113. (B)

When interest rates and exchange rates are strongly correlated, an increase in the real interest rate (for example) causes the exchange rate to climb and net exports to fall. The IS curve reflects combinations of GNP and interest rates such that aggregate supply equals aggregate demand (including net exports). Start at point E on Figure A20 where

IS represents the IS curve before the correlation between exchange rates and interest rates is considered. Now let the interest rate climb from R to R'. A lower level of GNP is required to match the diminished aggregate demand, given the correlation. Schedule IS' therefore applies, and it is flatter.

114. (B)

Exporters are concerned with the price of exports, denominated in the currency of their customers. They therefore want the price of the dollar to be as low as possible. If a stimulus is to be applied, one that reduces interest rates is preferred. Use simple IS–LM analysis to show that monetary stimulus lowers interest rates if it is not clear.

115. (E)

The notion is that the last unit of any input hired should be paid the increase in revenue that his or her or its employment generates. The latter is the marginal revenue product, not the marginal product, because payment must be denominated in units of currency and not units of output.

116. (B)

An increase in the sensitivity of the demand for money to the interest rate makes the LM curve steeper. That is because the increase in sensitivity means that a smaller increase in the transaction demand (and thus a small increase in GNP) is now needed to accommodate a given increase in the interest rate (with a corresponding reduction in assets demand) for a given money supply. Fiscal policy is thus less effective in moving GNP, and thereby increasing the demand for exports. The exchange rate response should thus be similarly diminished.

117. (D)

The marginal products of the two inputs are well defined (numbers are given), so perfect complementarity is ruled out. Some substitution is therefore expected: a reduction in the price of A should result in an increase in the employment of A and, even if the level of employment of B is not decreased, a reduction in the marginal product of A. If the employment of B is diminished, the marginal product of A should still decline. In either case, the price charged for output should fall. Since MRP is equal to MRxMP, it should be clear that the MRP of input A should fall because both MP and MR should fall. Since its initial marginal revenue product is $6 x 2 = $12, the new MRP should be less than $12.

118. (C)

To maximize tax revenue, it is necessary to tax commodities and/or factors of production with inelastic demand. In those cases, the higher prices created by the taxes cause smaller reductions in quantity demanded and thus generate higher tax revenues. All of the other options either refer to more elastic derived demand or an artificial target of unity.

119. (C)

The absence of rent implies that employment of the public factor is underpriced. A user fee should be charged to increase its price to match its true marginal cost. The fee would not lower the marginal product, though; it should, in fact, increase marginal product because employment would fall in response to the higher price. A tax on the final goods produced by the factor would not be appropriate, in most cases, because it would not induce the correct degree of substitution in production; it would produce only an output effect, and would therefore be inefficient.

120. (E)

The marginal revenue product of the new machine is 5 x $5 = $25; its cost is $10. Since its marginal revenue product, including an assessment of output market conditions, exceeds its cost, it should be purchased and employed.

121. (E)

A tariff of \$1.00 would shrink domestic demand to 200 units; domestic supply would meanwhile climb to 150 units. 50 units would be imported, and \$50 in tariff revenue would be collected.

122. (A)

In the labor theory of value, labor input determines value. If two goods require the same labor input in their production, then their prices should be identical.

123. (C)

Eastern Europe has been moving toward an increasing use of incentives to encourage people to meet planned objectives. Two of the most effective incentives are price (to signal desired commodities and/or factors of production) and profit (to signal commodities that are in high demand and thus contribute significantly to the public good).

124. (A)

Only the first answer could work against the investment in new capital that could increase the rate of economic growth. An increase in saving could make investment less expensive by making funds more available and thus cheaper. R&D is simply a way of discovering new opportunities. Domestic spending does more to stimulate consumption (and thus potential market) than does strategic spending. Only taxing the potential surpluses of innovative economic enterprise might discourage the sort of activity that could possibly spur growth forward.

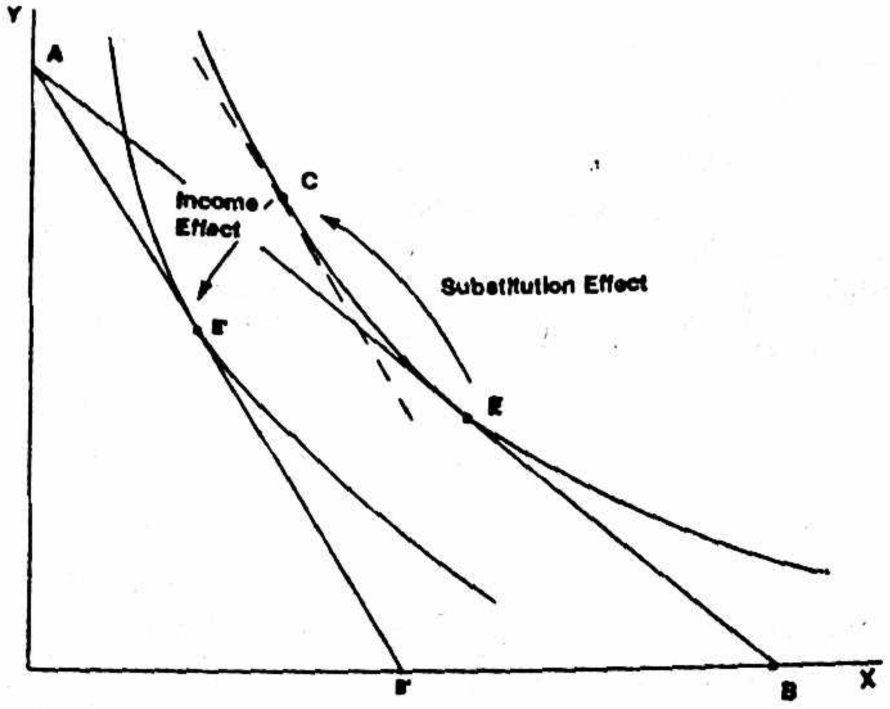


Figure A21

125. (B)

Consult Figure A21 in which the familiar income and substitution effect graphs are drawn. Starting at an initial equilibrium E, an increase in the price of X rotates the budget constraint in from locus AB to locus AB'. Measuring the substitution effect along the initial indifference curve from point E, notice that point C, reflecting the new prices and the original level of utility, is the benchmark for the substitution effect; the indifference curve is mildly convex to exhibit some degree of substitution short of perfection. As should be expected, the higher price for X makes Y more attractive, and the substitution effect measured from E to C shows the consumption of Y increasing. After measuring the income effect from C to the new equilibrium at E', however, it is clear that the decline in real income caused by the higher price for X pushes the consumption of both X and Y down.

126. (B)

Only answer (B) is both an accurate statement and an identification of something that changed in the last decade. High unemployment has been a problem for decades in poor countries. Poorly managed development projects have abounded. The marginal product of labor has not fallen. Collusion is unreasonable. Developing countries do not have an excess of capital. The high interest rates of the early 1980's did (1) increase the cost of carrying enormous foreign debt and (2) cause a recession that eroded existing and potential markets.

127. (E)

If leisure is a normal good, then higher incomes (for example), created in this case by higher wages, increase the demand for leisure. Higher wages also increase the opportunity cost of not working, so the substitution effect works away from enjoying more leisure. The slope of the labor supply curve for any one individual is determined by the net consequence of these two effects. The macro concept of full employment is not directly related to this income effect.

128. (E)

An isocost locus is a representation of combinations of inputs that all cost the same, in total, assuming constant given and thus constant input prices. For n inputs $\{x_1, \cdots, x_n\}$ with prices $\{w_1, \cdots, w_n\}$, an isocost locus for \$C is simply

$$C = w_1x_1 + \cdots + w_nx_n.$$

Only the last answer conforms to this definition. The combination of inputs that produce the same level of output is an isoquant, and can be combined with isocost constructions to characterize cost minimizing combinations of inputs to produce arbitrary levels of output.

129. (E)

The nominal return to the \$2000 investment in the video machine is 10% [=(\$200/\$2000)x100%]. From this amount, depreciation at 15% and inflation at 5% must be subtracted to produce –10% return in real terms. Even if prices were stable, in this case, the real return to the investment would be –5%, still unacceptable.

130. (C)

It is a matter of record that private banks hold the lion's share of LDC debt. It is for this reason that the international debt crisis is so important even for small borrowing in rural Nebraska. International default could damage banking's profit and solvency to an extent that domestic interest rates might have to increase.

131. (E)

Disguised unemployment is what some might call underemployment taken to its logical extreme; it is a statistical problem frequently encountered in studying LDC's.

132. (E)

It is a matter of record and increasing tension that the gap between the developed world and the developing world is not closing. In some cases, it is widening in a world that is most volatile.

133. (B)

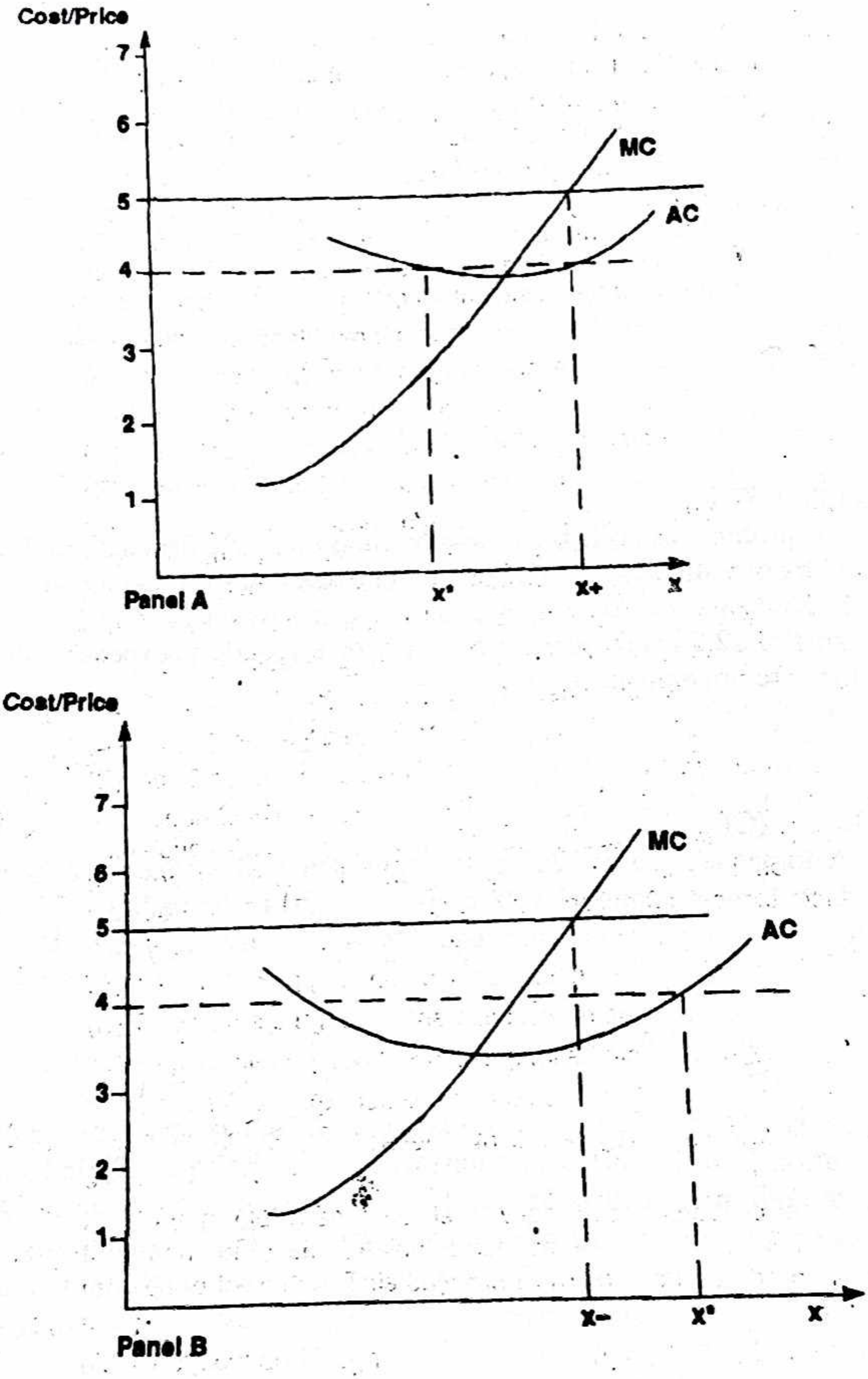
A prohibitive tariff is one which brings domestic demand into line with domestic supply so that there is no demand for imported goods. $3.25 clears the domestic market. Against a world price of $1.00, a tariff of $2.25 is required to make imported goods so expensive that they are not demanded.

134. (C)

A domestic supply of 200 units is consistent with a price of $2.50 for which domestic demand is 300 units. If imports are limited to 100 units, then total quantity demanded equals total quantity supplied at $2.50.

135. (C)

Consult Figure A22. Both panels show a firm making a profit in the situation described in the question (at point E with output X*). In Panel A, though, price equals $5 which equals marginal cost at an output greater than X*; this firm could earn larger profits by increasing its output and maximum profits at X+. In Panel B, though, maximum profits are earned where price equals marginal cost at an output X– < X*.


Cost/Price
7
6
5
4
3
2
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MC
AC
X*
X+
X
Panel A
Cost/Price
7
6
5
4
3
2
1
MC
AC
X−
X*
X
Panel B

Figure A22

GRE

ECONOMICS TEST

TEST III

GRE ECONOMICS
TEST III

Time: 170 Minutes
135 Questions

DIRECTIONS: Choose the best answer for each question and mark the letter of your selection on the corresponding answer sheet.

1. In his General Theory of Employment, Keynes pointed out that:

(A) the economy automatically tends toward full employment equilibrium

(B) if there is unemployment, there is also likely to be inflation

(C) the economy may be in equilibrium at less than full employment

(D) the interest rate is insignificant

(E) with flexible wages and prices, fluctuations in unemployment would disappear

2. Saying that Gross National Product is equal to Gross National Income means:

(A) incomes, wages, rents and interest are equal to payments of the factors of production

(B) trends in national income growth must be viewed, taking the GNP deflator into account

(C) expenditures on final output are equal to the total flow of income from the final product

(D) the flow of income to households is equal to Net National Product, NNP

(E) Gross National Product can be used as a measure of economic growth or stagnation

3. If the demand and supply curves for computers are:

$D = 100-6P$ $S = 28+3P$

where P is the price of computers, what is the quantity of computers bought and sold at equilibrium?

(A) 8

(B) 52

(C) 63

(D) 18

(E) 28

4. If total revenue (TR) is correctly specified by;
$TR = a + bQ - cQ^2$, where Q is quantity of output and a, b, c are positive parameters, then TR is maximized for this firm when they produce Q equal to:

(A) $b/2ac$

(B) $b/4c$

(C) $(a+b)/c$

(D) $b/2c$

(E) $c/2b$

5. The ABC Company has developed a regression equation to predict area sales, based on each area's population and median income where:

Y = area sales

X_1 = area median income

X_2 = area population

and, $Y = 14.52 + 1.12\,X_1 + 2.20\,X_2$

The projected sales for an area where the population is equal to 3 million and the median income is $21,000 is:

(A) over 10 million

(B) between 9 and 10 million

(C) between 8 and 9 million

(D) between 7 and 8 million

(E) between 6 and 7 million

6. A firm charges $800 for its unique word processor. If total revenue is $56,000 in July, how many word processors were sold that month?

(A) 70

(B) 700

(C) 30

(D) 95

(E) 900

7. The relationship between bond prices and their yield can be stated as follows:

(A) There is a positive correlation between bond prices and their yield.

(B) As bond prices increase arithmetically, their yields increase geometrically.

(C) There is no direct relationship; these two are independent.

(D) The price of a bond varies inversely with its yield.

(E) None of the above.

8. The Consumer Price Index (CPI) increased from 324.3 to 327.7 from January 1986 to January 1987. Which of the following best describes this increase?

(A) 3.4% increase

(B) 1.05% increase

(C) 10.2% increase

(D) 2.05% increase

(E) None of the above

9. When the unemployment rate is calculated, the following are counted among the unemployed:

(A) the institutionalized population.

(B) only persons 18 years old and over.

(C) those who have "given up" looking for a job.

(D) persons receiving unemployment compensation.

(E) all persons not employed.

10. The definition of the standard deviation of a sample of observations is:

(A) $S_x = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n - 1}}$

(B) the range of the distribution

(C) the variance of the distribution

(D) the extent of variation of the distribution

(E) A and D

11. The declining value of the dollar would have the following significance:

(A) It would have adverse repercussions on the balance of payment situation in the United States.

(B) Foreign travel would become more expensive.

(C) A dollar would buy more yen.

(D) International indebtedness of the U.S. to other countries would decrease.

(E) Goods purchased with U.S. dollars in other countries would become less expensive.

12. Which one of the following statements is not true of a monopoly?

(A) A single firm produces the entire market supply of a commodity.

(B) A monopoly has a horizontal demand curve.

(C) Marginal revenue is always less than price.

(D) Profit is maximized where marginal revenue is equal to marginal cost.

(E) Monopolies have the power to alter market prices.

13. Which of the following statements is not true of supply side economics?

(A) This economic theory is the subject of a book called *Wealth and Poverty*.

(B) David Stockman helped develop this theory.

(C) This theory was heavily used by the Kennedy administration.

(D) This theory is nicknamed "trickle-down" economics.

(E) This theory concentrates on supply versus demand.

14. An increase in the discount rate at the FED generally has the following effect on bond prices:

(A) There is no demonstrable effect.

(B) Such an increase tends to lower bond prices.

(C) Such an increase tends to raise bond prices.

(D) Bond prices rise temporarily, and then drop.

(E) Bond prices are related to the government purchase and sale of bonds, but not to the discount rate.

15. Find the present discounted value of an asset which pays $10,000 in a year at 7% interest.

(A) 10,700

(B) 9,346

(C) 10,070

(D) 10,007

(E) None of the above

16. The consumer's optimal equilibrium is determined by

(A) the equality of supply and demand in the product market.

(B) the equality of supply and demand in the labor market.

(C) a point on the next highest indifference curve.

(D) a point on the indifference curve that indicates consumer satisfaction.

(E) a point at which the indifference curve is tangent to the budget constraint.

17. A firm's average cost function is presented as:

$$\text{average cost} = 350 + \frac{9{,}000}{Q}$$

The price for one unit of output is $500. How many units of output must this firm sell to break even?

(A) 60	(D) 20
(B) 5	(E) 100
(C) 350	

18. The following regression equation was developed using actual data in an attempt to determine the value of a used personal computer:

$$P = 20 + .5x - .5G, \qquad R^2 = .96$$
$$N = 400$$

where

P = price of the used computer

x = price when new

G = age of the computer

The data can be interpreted as follows:

(A) Used computers cost less than new computers.

(B) Used computer prices bear a relationship to the price of the computer when new, but not to the age of the computer.

(C) Used computer prices bear a positive relationship to the age of the computer and the price when new.

(D) No variation is explained by this equation.

(E) Used computer prices have a positive relationship with price when new, and an inverse relationship to age.

19. In *The Wealth of Nations*, Adam Smith attempted to demonstrate the following about international trade:

(A) Tariffs and quotas should be used to protect domestic industries.

(B) Countries should produce only those commodities for which they have an absolute advantage.

(C) When countries specialize and trade, world wealth is enhanced.

(D) Countries should be self-sufficient and produce all commodities they consume.

(E) A country should produce and trade those commodities for which it has the greatest relative disadvantage.

20. What sample statistic would give you an unbiased estimation for an independent and identically distributed random variable, x, with $E(x_i) = u$, var $(x_i) = \sigma^2$ and

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

(A) $\sum_{i=1}^{n}(x_i - \bar{x})^2$

(B) $\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2$

(C) $n\sum_{i=1}^{n}(x_i - \bar{x})^2$

(D) $\frac{1}{n-1}\sum_{i=1}^{n}(x_i - \bar{x})^2$

(E) None of the above.

21. In describing the term "velocity of money," all of the following are FALSE except

(A) the rate at which income is spent on credit purchases.

(B) the rate at which the entire money stock is turned over in a year to purchase the GNP.

(C) the rate at which the value of money erodes due to increased prices.

(D) the rate at which the Treasury creates.

(E) the rate at which money is saved.

22. To avoid double counting when the GNP is estimated, economists

(A) price all goods and services bought and sold in all markets.

(B) use the GNP deflator.

(C) price only intermediate goods.

(D) calculate value added at each stage of production.

(E) only price goods for sale at retail shops.

Questions 23 – 24. The income and consumption data below will be used to answer the next two questions.

Income	Consumption
350	335
300	290
250	245
200	200
150	135
100	110

23. Which consumption function describes the data above?

(A) C = 35 + .80Y

(B) C = 20 + .90Y

(C) C = 10 + .70Y

(D) C = 30 + .65Y

(E) C = 15 + .70Y

24. You are told the level of savings in the economy is $25 billion at equilibrium. Using the consumption function C = 20 + .9Y, find equilibrium income. (Hint: Y = C + S)

(A) 250

(B) 350

(C) 270

(D) 900

(E) 450

25. Construct a two-tailed 90 percent confidence interval for estimating the population mean, μ, of a large, identical, independent, and normal population, given a sample mean of 7, based on 100 observations, and a population deviation of 1.3.

Z scores	Area of Tail in Standard Normal Distribution
1.65	.05
1.28	.10
1.04	.15
.126	.45

(A) $5 \leq \mu \leq 10$

(B) $5.12 \leq \mu \leq 9.80$

(C) $6.79 \leq \mu \leq 7.21$

(D) $5.15 \leq \mu \leq 8.85$

(E) $5 \leq \mu \leq 9.5$

26. The IS curve is based on which of the following assumptions?

(A) There is only one interest rate and income level at which the product market can be in equilibrium.

(B) Investment equals savings at equilibrium, investment increases with income, and saving is related to interest.

(C) Money market equilibrium can occur at many levels of interest and income.

(D) Investment and savings decisions vary inversely with income.

(E) Stock market prices are generally high when interest rates are low.

27. The speculative demand for money is

(A) money balances held for purposes of near-future purchases.

(B) money set aside to meet unexpected events.

(C) money set aside to invest in the future.

(D) money allocated for monthly expenses.

(E) money saved to pay taxes.

28. Choose the statement below which BEST describes why firms locate where they do.

(A) Firms locate in the states where the tax base is low.

(B) Firms locate in rural areas where population densities, wages, and land values are low.

(C) Firms locate where costs of raw materials are minimized by access to raw materials.

(D) Firms locate with no special criteria for site selection.

(E) Firms locate where differentials between costs and benefits of doing business are maximized.

29. If interest rates are high and the transactions demand for money is low, which of the following is most likely to be true?

(A) The speculative demand for money will be increasing.

(B) The velocity of money will increase.

(C) Consumers will not be using credit.

(D) The FED will be following an "easy money" policy.

(E) There will be significant unemployment.

30. The Keynesian multiplier concept reveals that

(A) an increase in savings is generally followed by an increase in the interest rate.

(B) an increase in investment causes a decrease in income and employment.

(C) an increase in the general level of employment occurs when investment decreases.

(D) a consumption spending and re-spending process occurs with increased investment.

(E) as the money supply increases, prices go up if the economy is at full employment.

31. Which of the following would not cause the LM curve to shift to the right?

(A) the purchase of bonds by the federal reserve bank

(B) a downward shift in the speculative demand for money

(C) a lowering of the discount rate by the FED

(D) an expansion of the money supply by the Treasury

(E) a change in the rate of interest

32. Which of the following will cause a monetary induced change versus a fiscal induced change in equilibrium income as determined by IS – LM analysis?

(A) a shift in the consumption function

(B) a shift in government expenditures

(C) a change in liquidity preference

(D) a change in government expenditures

(E) a change in government tax policy

33. The 1986 Tax Reform Act

(A) reduces the number of tax brackets.

(B) eliminates the IRA deduction brackets.

(C) was fully implemented in 1987.

(D) took its heaviest toll on low income families.

(E) increases corporate tax rates.

34. Gresham's Law was a particularly important issue in the presidential campaign of

(A) William Jennings Bryan.

(B) William Howard Taft.

(C) Theodore Roosevelt.

(D) Woodrow Wilson.

(E) Warren G. Harding.

35. Which of the following is NOT true in an industry characterized by pure competition?

(A) There is ease of entry and exit.

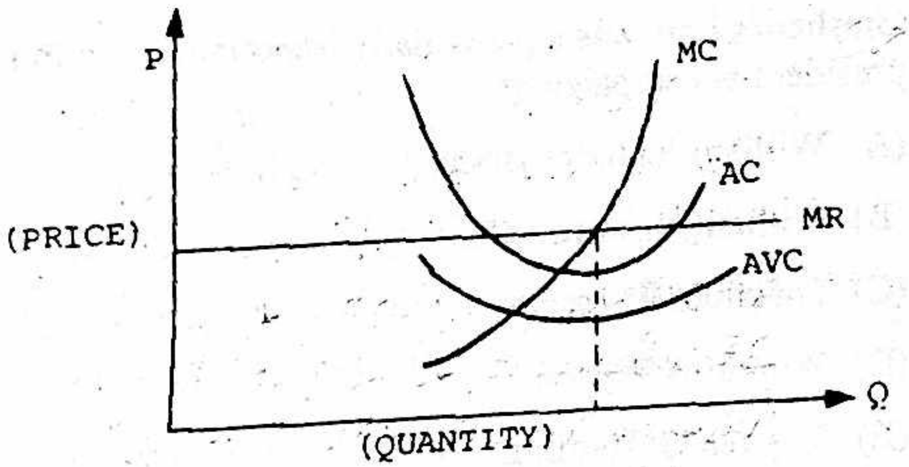
(B) There are many buyers and sellers.

(C) The firm's demand curve is horizontal.

(D) A single firm can influence price.

(E) The marginal revenue curve is horizontal.

36. The diagram presented below, showing short term equilibrium for the competitive firm, illustrates which of the following?



(A) This firm is not earning a profit.

(B) In competitive firms, there is ease of entry and there are many firms.

(C) The firm is earning a profit.

(D) Marginal revenue does not equal marginal cost.

(E) Total revenue does not equal PQ.

37. A profit maximizing monopolist facing a perfectly competitive input market pays an input:

(A) more than the additional revenue it creates if hired.

(B) more than the value of its marginal product if hired.

(C) less than the value of its marginal product if hired.

(D) less than the additional revenue it creates if hired.

(E) equal to the value of its marginal product if hired.

38. Which of the following is most likely to discourage capital investment?

(A) High savings rates

(B) Increasing corporate profits

(C) Investment tax credits

(D) Moderate growth of GNP

(E) High interest rates

39. The simple Cobb-Douglas production function, $K^{a}L^{1-a}$, where K is units of capital, L is units of labor, and a (1–a) is a parameter, implies

(A) returns to labor are an increasing share of output due to technological change.

(B) returns to capital are an increasing share of output due to technological change.

(C) capital's and labor's share of output is relatively constant.

(D) the U.S. is increasingly becoming a service economy.

(E) GNP is not increasing as rapidly as it did in post-war years.

40. Certain monopolies are allowed to exist with some regulation because

(A) the existence of more firms would produce greater economies of scale.

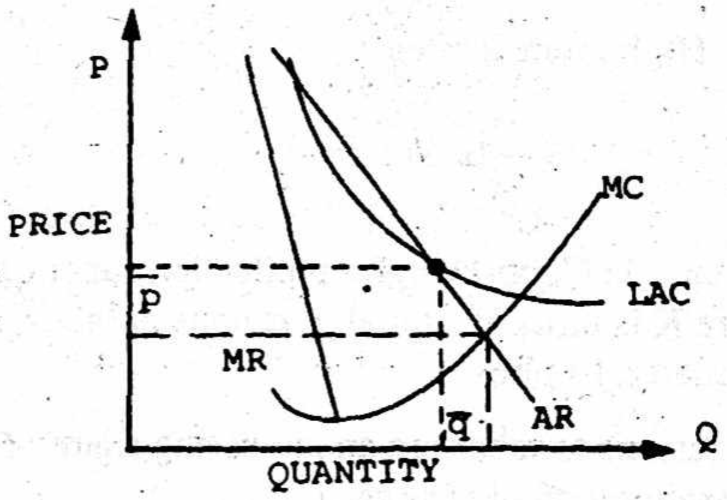
(B) the industry benefits from a natural monopoly.

(C) the existence of more firms would enhance price competition.

(D) the existence of more firms would result in insufficient capacity.

(E) the industry is one which serves a large population.

Use the diagram for the ABC utility company presented below to answer questions 41 and 42.



41. The ABC utility company is a monopoly regulated by the government. If you were a government economist, which of the following would you use to represent price, if you wanted to avoid a subsidy and rate discrimination?

(A) Price the utility where MR=MC.

(B) Price the utility where MC=AC.

(C) Price the utility where MC=AR.

(D) Price the utility where P=Q.

(E) Price the utility where AR=LAC.

42. Public officials are demanding lower utility rates. Which of the following conditions would justify lower rates?

(A) There is a general overall reduction in demand for the utility.

(B) Marginal and average costs are increasing.

(C) The building of a new generator plant is in the offing.

(D) Economies of scale can be achieved by operating at a lower average cost.

(E) Total revenue does not cover operating costs.

43. Non-domestic seed money for economic development in less developed countries comes from

(A) the World Bank.

(B) the United Nations, World Health Organization.

(C) the International Monetary Fund.

(D) multinational investments by Japan.

(E) the International Labor Organization.

44. If event A occurs, its payoff will be $5,670.00. The probability of event A occurring is .87. What is the expected payoff of event A?

(A) $5,670.00

(B) $5,000.00

(C) $4,932.90

(D) $4,832.10

(E) $4,000.00

45. Economic conditions at the beginning of the Reagan administration in the early 1980s were marked by:

(A) high inflation rates and low rates of interest.

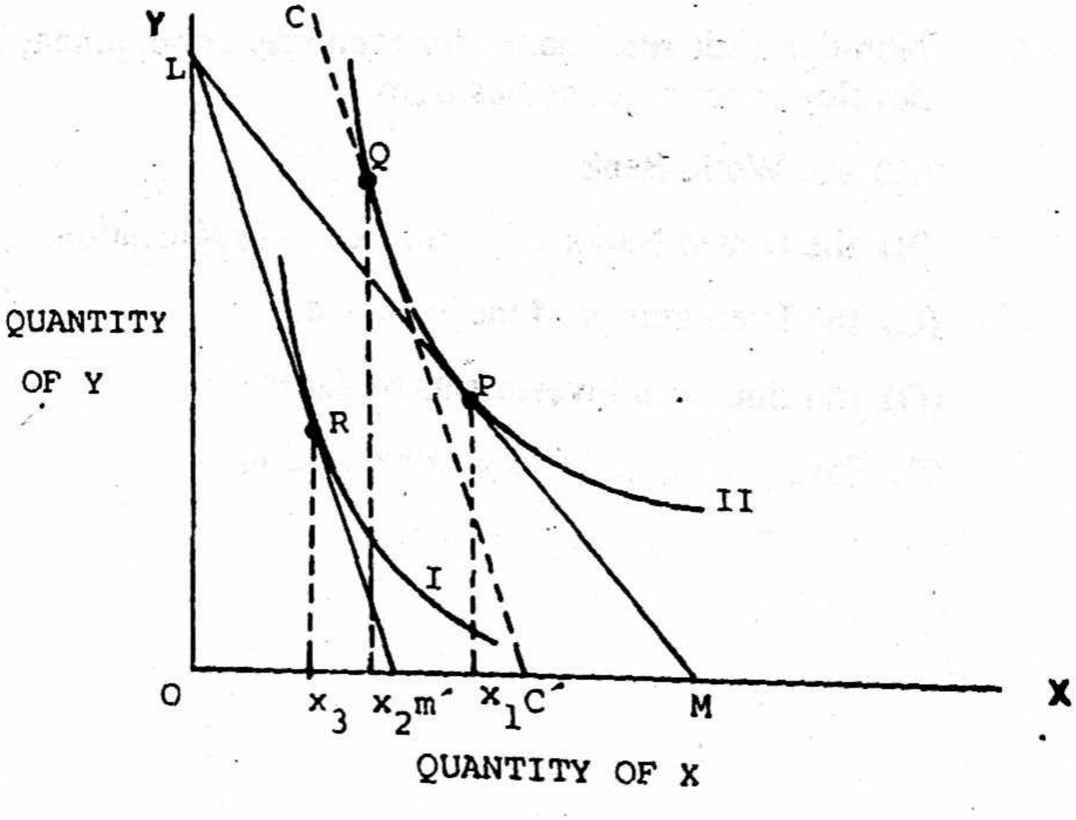
(B) relatively high rates of economic growth.

(C) high rates of interest and inflation.

(D) prime conditions for using government spending as a means for stimulating economic growth.

(E) prime conditions for the tightening of credit controls at the FED.

Use the diagram below to answer question 46.



46. In the diagram above, equilibrium purchases of X are found at point P on indifference curve II. When the price of X goes up, the budget line drops from LM to LM' and the consumer now finds equilibrium at point R on indifference curve I. Inspect the diagram and choose the answer below that best describes the substitution effect of this change in price.

(A) $O–X_3$

(B) $X_3–X_2$

(C) $X_3–X_1$

(D) $X_2–X_1$

(E) $O–X_1$

47. A firm notices that when it charges $8.00 per unit, they sell 1000 units. It also observes that when it charges $7.00, *ceteris paribus*, they sell 1200 units. You, the economist, are given this information, but are not told if the price changes from $7.00 to $8.00, or vice-versa. What would be the best elasticity estimate you could give under these conditions?

(A) 2/3

(B) 5/8

(C) 15/11

(D) 8/3

(E) 5.0

48. According to the information in question 47, it is clear that

(A) demand for commodity X is relatively elastic.

(B) price elasticity for commodity X is perfectly elastic.

(C) elasticity represents a smaller proportional change in quantity than in price.

(D) demand for commodity X is relatively price inelastic.

(E) demand for commodity X is perfectly inelastic.

49. Which of the following is NOT an example of non-price competition in the auto industry?

(A) Zero percent auto loans

(B) Television advertising

(C) Establishing market niches

(D) End of the year discounts

(E) Yearly changes in models and style

50. The law of diminishing marginal rate of substitution in production states that:

(A) as one factor of production is substituted for another, the marginal productivity of the first decreases in relation to the second.

(B) as one factor of production is substituted for another, total product declines.

(C) as factors of production are substituted for one another, decreased supply of the commodity least used influences its price.

(D) average product with factor substitution is constantly decreasing.

(E) factors of production can only be marginally substituted for one another.

51. Which of the following is NOT characteristic of underdeveloped nations?

(A) Low per capita income

(B) Low growth rate of GNP

(C) General needs for substantive investment in the infrastructure

(D) Relatively low educational levels

(E) Low population growth rates

52. In correlation analysis, a coefficient of determination of .89 between x and y would mean

(A) knowing x may be helpful in predicting y.

(B) perfect predictions can be made from knowledge of x.

(C) the x variable is of little help in predicting y.

(D) x causes y.

(E) None of the above.

53. If merchandise exports are a constant proportion of GNP, such that $E_x = .18$ GNP, find the level of merchandise imports that would represent a zero merchandise trade balance when GNP = 10,000.

(A) 180

(B) 555

(C) 5,555

(D) 1,800

(E) Cannot be determined from the information given.

54. Which equation below would best represent an indifference curve between 5 and 10 dollar bills, given that we ignore any carrying costs of carrying money? In these equations, X stands for a quantity of 10 dollar bills, Y = 5 dollar bills. U_o is a given level of utility.

(A) $Y = U_o - 4X$

(B) $X = U_o - 2Y$

(C) $Y = U_o - 2X$

(D) $X = U_o - Y$

(E) $Y = U_o - X$

55. Which of the following is an explanation of why there is upward pressure on the price level as full employment is reached?

(A) Wage levels tend to drop as full employment levels are reached.

(B) Shortages begin to appear in some markets as the full employment level is reached.

(C) Corporate profits experience a squeeze as the economy moves toward full employment.

(D) The FED normally pursues a tight money policy as full employment is reached.

(E) A natural rate of unemployment guarantees inflation as the economy nears full employment.

56 Economic growth is a problem in an environment with high rates of interest because

(A) the price of government bonds is relatively high.

(B) the marginal efficiency of capital is less than the rate of interest.

(C) relatively high rates of interest cause an outflow of capital to other countries.

(D) short term demand curves for capital equipment shift to the right.

(E) there is an excess supply of money.

57. An increase in "new" demand deposits at bank A has the following effect on the supply of money.

(A) It expands the money supply through its effect on the rediscount rate.

(B) The money supply will be increased by the exact amount of bank A's new deposits.

(C) The money supply does not change when new deposits are created.

(D) The money supply will potentially expand by a multiple of:

$$\frac{1}{\text{reserve requirement}}$$

(E) The money supply will potentially expand by:

$$1-\frac{1}{\text{reserve requirement}}$$

58. Recent evidence concerning a reduction in U.S. taxes shows that

(A) tax cuts appear to produce an increase in savings.

(B) tax cuts increase aggregate demand by the full amount of the net tax multiplier.

(C) aggregate demand is increased to the same levels it would be if government spending were increased by the amount of the tax cut.

(C) relatively high rates of interest cause an outflow of capital to other countries.

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(C) aggregate demand is increased to the same levels it would be if government spending were increased by the amount of the tax cut.

(D) tax cuts cause a reduction in GNP.

(E) None of the above.

59. Businessmen generally try to make investments in capital equipment which will yield the following results:

(A) an internal rate of return which is less than the market rate of interest.

(B) a rate of return at which the discounted present value of future net returns is less than the cost of capital equipment.

(C) a marginal outlay on additional capital that will be greater than the marginal revenue product.

(D) an internal rate of return which is greater than the market rate of interest.

(E) a rate of return at which the discounted present value of future returns is greater than the cost of capital equipment.

60. If a Canadian dollar costs 75¢ in terms of U.S. dollars, how much Canadian money would an American need to spend in Canada to get a dollar's worth of U.S. value?

(A) 25¢

(B) $1.25

(C) 99¢

(D) $1.33

(E) The answer cannot be determined from the information given.

61. If the general price level increases, the real income of labor will increase only if the following condition holds:

(A) employers have a monopsonistic hiring market.

(B) the increase in wages is equal to labor's increase in productivity.

(C) wages increase by exactly the same amount as prices.

(D) proportionate increases in wages are greater than the proportionate increase in the price level.

(E) price increases are greater than wage increases.

62. If the probability of an American woman between the ages of 35 and 45 having a full time job is 50%, which happens to be independent of whether the woman is married or not, and the probability of an American woman between the ages of 35 and 45 being married is 70%, what is the probability that an American woman between the ages of 35 and 45 is married and has a full time job?

(A) 120%

(B) 20%

(C) 35%

(D) 50%

(E) 70%

63. Some economists argue that wage-price controls are useful because

(A) wage-price controls increase productivity.

(B) such controls most properly allocate resources.

(C) wage price controls provide a permanent cure for inflation.

(D) corporations and unions are not fully responsive to free market adjustments.

(E) these controls create jobs for government workers.

64. If a group of graduate students were given an IQ test, their scores would probably have which of the following distributions in relation to the entire population?

(A) Test scores would follow a normal bell-shaped curve.

(B) Scores would be skewed to the left of normal.

(C) Scores would be skewed to the right of normal.

(D) Test scores would be bipolar.

(E) Test scores would be unbiased.

65. If the sum of domestic taxes and savings is greater than the sum of government expenditures and intended investment (assuming a closed economy), which of the following is likely to result?

(A) Unintended inventories will accumulate.

(B) Aggregate demand will increase.

(C) Total leakages resulting from the tax will equal the amount of the tax.

(D) An automatic increase in savings will restore equilibrium.

(E) Government expenditures will be exactly equal to taxes.

66. Which of the following is a true statement about the progressive income tax structure, which is not indexed to the rate of inflation?

(A) A proportional fall in wages and prices can result in increased real disposable income.

(B) Wage earners in higher income tax brackets pay a lower rate of taxes.

(C) During times of inflation, wage earners pay lower tax rates.

(D) Poor people generally pay higher taxes.

(E) The highest tax rate is paid by the people who work for cash.

Use the following set of equations to answer problems 67 and 68.

$$m_1 = kY$$

$$M_s = m_1 + m_2$$

$$m_2 = \left(\frac{1}{5} - k\right)Y$$

$$Y = 200$$

where:

m_1 = transactions demand for money

M_s = money supply

m_2 = speculative demand for money

Y = 200 = equilibrium income

67. Using the above equations, what is equilibrium M_s when $k = .15$?

(A) 10

(B) 30

(C) 40

(D) 50

(E) 5

68. With k = .15, what is the ratio of the transactions demand for money to the speculative demand for money?

(A) 3 to 1	(D) 4 to 1
(B) 5 to 4	(E) 5 to 1
(C) 3 to 4	

69. In an industry with a falling long term supply curve, which of the following is true?

(A) Industry unit costs are constant.

(B) Industry unit costs are decreasing.

(C) Industry unit costs are increasing.

(D) Industry unit costs cannot be determined.

(E) Industry unit costs symbolize diminishing returns.

70. The downward kinked demand curve facing the individual oligopolist implies that

(A) there is continuity in the marginal revenue curve.

(B) competitors have a tendency to follow price decreases but not price increases.

(C) oligopolists face price certainty.

(D) if the firm drops its price, its share of market will increase.

(E) total revenue remains the same if a firm increases prices.

71. Socialistic governments can choose from the actions listed below that tend to equalize income distribution. Which action would result in the LEAST misallocation of resources?

(A) Instituting rent and food price controls.

(B) Providing free health services to the population.

(C) Removing any barriers erected by an individual or a group of individuals that prevents an equal opportunity for a better education.

(D) Augmenting the progressive nature of taxation.

(E) Imposing a ceiling on wage rates.

72. Optimality, as defined by Vilfredo Pareto, occurs when

(A) monopolies are required to produce, where price is equal to marginal cost.

(B) when any one person cannot benefit without resulting in a loss to someone else.

(C) one or more persons benefit and are willing to compensate injured parties.

(D) thinking persons weigh benefits and costs of welfare programs.

(E) the economy is operating at full employment.

73. The Lorenz curve shows that

(A) the degree of income equality (or inequality) within an economy at any point of time.

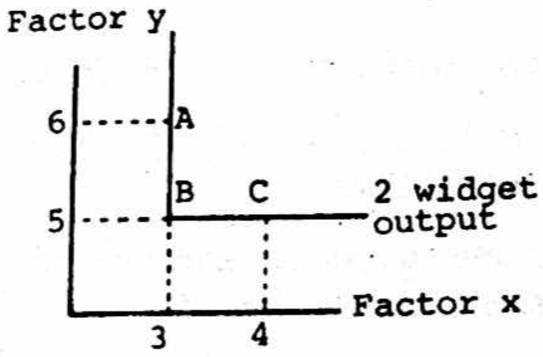
(B) the medium income in the U.S. has consistently risen over time.

(C) people in the highest income groups control the largest share of wealth.

(D) the unemployment levels do not affect all ethnic groups equally.

(E) per capita income is increasing in the Southeast.

74.



The isoquant curve above shows the marginal rate of substitution between factor X and factor Y, for the manufacture of two widgets. According to the diagram, it is true that

(A) the two factors are perfect substitutes.

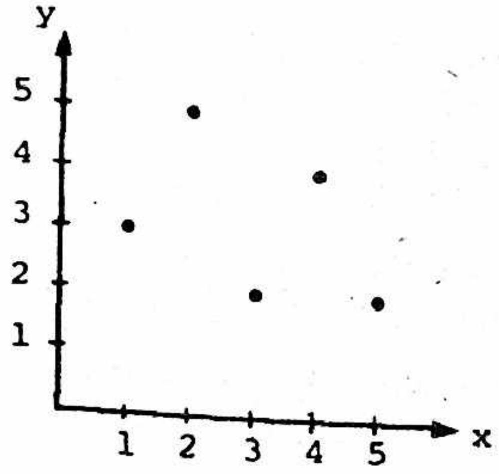
(B) the production of 2 widgets requires 6Y and 4X.

(C) the marginal rate of substitution of these factors is elastic.

(D) the optimal place for the firm to operate is at point C.

(E) these factors cannot be substituted for one another.

75. Which regression equation listed below best describes a line fitted to the scatter diagram below?



(A) $Y_x = 4.1 - (3/10)X$

(B) $Y_x = -5 + 5X$

(C) $Y_x = 4.1 - X$

(D) $Y_x = 4.1 + 5X$

(E) $Y_x = 4.0 - 2X$

76. A regression line found by the method of least squares to "fit" a scatter diagram relating X and Y has which of the following properties?

(A) The slope of the ß statisti[illegible]is always positive.

(B) Finding the point corresponding to any given value of X yields exact information about Y.

(C) It describes the relationship between X and the standard deviation of the distribution of Y.

(D) The sum of the squares of the deviations about the mean of Y is less than the squared deviations around any other line through the diagram.

(E) The estimates of α and β are variable for each different value of X.

77. Some economists theorize that as upper income members of society acquire financial assets, they develop a demand for increasingly more financial assets. Which of the following revelations would corroborate the theory?

(A) Statistical analysis shows a negative correlation between new family asset acquisitions and present asset holdings.

(B) Tax returns show that some families use investments for tax deduction purposes.

(C) Relevant statistics show that consumption spending increases more dramatically than income, as aggregate income increases.

(D) Pertinent data show as income rises, families have a preference for relatively less consumption and more saving.

(E) An analysis of savings rates reveals that as income increases, families believe they have "enough" savings.

78. A statistician would draw the conclusion that there is no relationship between X and Y in a multivariate model under the following conditions:

(A) all coefficients of the regression equal zero.

(B) the coefficient of correlation approaches 1.

(C) estimates of α and β are biased.

(D) estimates of α and β are unbiased.

(E) α is positive.

79. The paradox of thrift demonstrates that .

(A) thrift increases individual indebtedness.

(B) as the savings function shifts to the right, people save more and consume less.

(C) as income increases, upward movement occurs along the savings function.

(D) at higher rates of interest, people tend to save larger amounts of money.

(E) as the savings function shifts to the left, people consume less and are eventually able to save less.

80. Drawbacks to using government expenditures as a means of countercyclical change includes the fact that

(A) they are not as effective as tax reductions.

(B) the government sometimes invests in resources in scarce supply.

(C) the multiplier for government expenditures only holds in times of economic prosperity.

(D) expenses on things like transfer payments are not economically expansive.

(E) government expenditures can stimulate aggregate demand when there is less than full employment.

81. Find the slope of an assumed linear demand curve for theater tickets, when persons purchase 1,000 at $5.00 per ticket and 200 at $15.00 per ticket.

(A) 1/20
(B) −1/30
(C) 1/30
(D) −1/80
(E) 1/80

82. An increase in mortgage interest rates will probably have the following effect on housing prices:

(A) Housing prices will become artificially inflated.

(B) Housing prices will decrease.

(C) Housing prices will not be affected.

(D) Housing prices will be deflated, but only after the new mortgages expire.

(E) Creative financing will quickly cause housing prices to increase.

83. Households tend to seek increases in nominal versus real balances of money because

(A) an increase in real money balances buys less than a similar increase in nominal balances.

(B) they suffer from money illusion.

(C) increases in nominal money balances are taxed at a lower rate than increases in real balances.

(D) people are concerned with the real value of their assets.

(E) households normally have deflationary expectations.

84. The long term demand for real money balances will rise when

(A) the income elasticity of the demand for money is less than unity.

(B) there is a long term increase in the price level.

(C) there is a relative increase in the stock of government securities.

(D) long term market interest rates are falling.

(E) long term bond prices are falling.

85. During times of recession, the following fiscal-monetary mix has the likelihood of increasing aggregate demand:

(A) higher rates of taxation and an easy money policy by the FED

(B) tight money policy and higher rates of taxation

(C) increased government spending and an easy money policy by the FED

(D) decreased government spending and higher rates of taxation

(E) lower taxes and less government spending

86. Allocative efficiency for a commodity occurs when

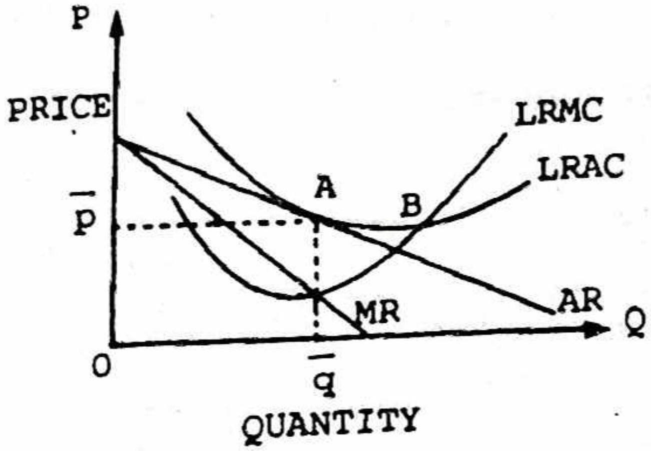
(A) technical efficiency is maximized.

(B) the marginal utility of the good for consumer A (with a given income) is equal to marginal cost.

(C) the price decreases to make a good available to more consumers.

(D) the marginal valuation of the product by all consumers is equal to marginal cost.

(E) All of the above.



87. Consider the diagram showing average revenue, marginal revenue, long run marginal cost, and long run average cost for a firm operating in an industry with monopolistic competition. If the firm is operating at point A, which of the following must be true?

(A) the seller is operating at the lowest level of long run average cost.

(B) attempts should be made to produce at point B.

(C) at this point MR = $\overline{p}$.

(D) long run profit is maximized.

(E) the seller is earning excess profits.

88. U.S. borrowing from foreign countries would be the LEAST destabilizing when

(A) borrowing is used for current consumption.

(B) the U.S. federal deficit is growing.

(C) the borrowing is used to build productive capacity.

(D) foreign capital is put into third world loans by U.S. banks.

(E) the borrowing is used for transfer payments.

89. Products X and Y are substitutes over a range of prices. Product Z is also a substitute for X and Y, but in comparison to these two commodities, it is a relatively inferior good. If incomes remain stable and shortages occur in the supply of X, which of the following is likely to be true?

I. Prices of X, Y and Z will go up.

II. Consumers will purchase more of Y and Z.

III. Consumption of Y will increase more than consumtion of Z.

(A) I only

(B) II only

(C) I and III

(D) II and III

(E) I, II and III

90. When the economy is operating at less than full employment, the classical economist would argue that

(A) the rate of interest and investment levels may not be affected by a fall in wages and prices.

(B) the LM curve will continue to shift to the right until unemployment is eliminated.

(C) the real value of money would decrease.

(D) interest rates would increase.

(E) prices would go up.

91. When an economist states that Net National Investment (NNI) in period A was zero, it means that

(A) no investment was made in period A.

(B) the capital stock was maintained intact.

(C) new investment exceeds capital depreciation.

(D) new investment was significantly less than capital depreciation.

(E) the productivity of the capital stock was increased.

92. If the Treasury required the central bank to buy bonds in the amount of $10 million, the effect on the money supply would be the same as the effect of

(A) the sale of $10 million in bonds by the central bank to commercial banks.

(B) the purchase of $10 million in U.S. bonds by foreigners.

(C) the purchase of $10 million in bonds by the central bank from commercial banks.

(D) the retirement of $10 million in old bills by the Treasury.

(E) the Treasury printing $10 million in new money.

93. Quality controllers at the LMN corporation formulate the null hypothesis that the proportion of defective items in the production line is 10%. They reject this hypothesis when they find 12 defective items in 100. If the defective rate is really 10%, what type of error did they make?

(A) Standard error of the mean

(B) A type II error

(C) The error curve

(D) A type I error

(E) The error probability

94. If X becomes more expensive in relation to Y, what happens to the budget line in the X–Y space, with Y on the vertical axis?

(A) It shifts to the right

(B) It shifts to the left.

(C) The slope becomes flatter.

(D) The slope becomes steeper.

(E) The slope remains the same.

95. If an individual has a money income M of $999, the price of X is $7.00 per unit and the price of Y is $3.00 per unit, find the equation for the budget line.

(A) $Y = 333 - (7/3)X$

(B) $Y = 142 - (7/3)X$

(C) $Y = 142 + (3/7)X$

(D) $Y = 333 + (7/3)X$

(E) None of the above

96. If the economy is in equilibrium at $180 billion and taxes are reduced by $20 billion, find the new equilibrium, given that this is a "simple" economy, i.e. exogenous government spending, tax collection and investment spending and a marginal propensity to consume (MPC) of .75.

(A) 60

(B) 240

(C) 180

(D) 200

(E) 250

97. Which of the following is NOT a factor which enhances an economy's growth potential?

(A) Increasing levels of investment.

(B) Relatively high levels of training among the labor force.

(C) A relatively high capital to output ratio.

(D) New technologies.

(E) An adequate propensity to save.

98. An injection of government spending has a greater impact on national income than a tax cut of an identical amount because

(A) households do not spend 100% of their initial increase in disposable income from a tax cut.

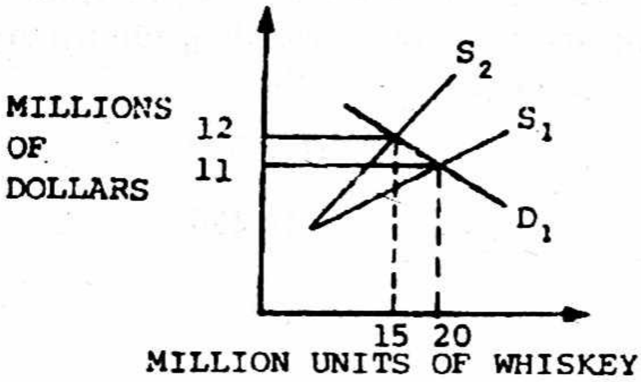
(B) government money is used for more high-powered projects than money from tax cuts.

(C) tax cuts are spent at a higher rate than other disposable income.

(D) tax cuts generate new government revenue.

(E) government dollars used to increase expenditures are always printed by the Treasury.

Use the diagram below for questions 99 and 100.



In the diagram, S_1 represents the industry supply curve for scotch whiskey.

D_1 is the consumer demand for the whiskey.

S_2 represents the supply curve of scotch after a 20% ad valorem tax has been imposed.

99. Find the change in revenue to the industry due to the tax.

(A) $40 million
(B) $2 million
(C) $25 million
(D) $34 million
(E) $36 million

100. Find the revenue the government collects as a result of the tax.

(A) $10 million
(B) $16 million
(C) $30 million
(D) $40 million
(E) $26 million

101. Conflicts between the goals of the Treasury and the Federal Reserve Bank exist when

(A) the GNP is increasing, thus causing tax revenues to increase.

(B) the FED restrains money to reduce inflation and the Treasury needs to borrow.

(C) the FED follows an easy money policy to reduce unemployment, and the Treasury needs to borrow.

(D) national debt and interest rates are decreasing due to fiscal restraint.

(E) none of the above.

102. A price cross elasticity of .81 between X and Y shows that

(A) they are complementary goods.

(B) they are competitive substitutes.

(C) they are not substitutes.

(D) there is no relationship between the changes in price of one good and consumption levels of the other.

(E) a reduction in the price of one would cause an increase in the consumption of the other.

103. If a consumer purchases a one year CD, yielding 6 1/2% interest and the rate of inflation during that year is –4%, what is the real rate of interest?

(A) 10 1/2%

(B) 2 1/2%

(C) –2 1/2%

(D) 1 1/3%

(E) None of the above

104. Which of the following represents monetary policy geared to increase the supply of money?

(A) The purchase of bonds by the Federal Reserve Bank

(B) The sale of bonds by the Central Bank

(C) An increase in reserve requirements

(D) An increase in the discount rate

(E) A decrease in taxes

105. The expectation that inflation will increase has the following effect on the long term interest rate:

(A) Interest rates will be depressed because people will spend more and invest less.

(B) Interest rates will be depressed because the FED will be likely to "ease up" on the money supply.

(C) Interest rates will go up to compensate investors for a reduction in future purchasing power.

(D) There will be no significant effect on interest.

(E) Interest rates will go up because the FED tends to restrict credit during inflation.

106. Which one of the following would cause demand-pull inflation?

(A) Increases in production costs

(B) Wage gains in proportion to productivity gains

(C) An increase in aggregate demand, with shortages of supply

(D) Monopsonistic labor markets

(E) Disproportionately high payments to the factors of production

107. For firm ABC, using factor inputs Q and Z, the formula for the isocost curve is:

$$180 = 6Q + 3Z$$

Find the marginal rate of factor substitution that represents the least cost combination of factor inputs, given that this firm's isoquants exhibit a diminishing marginal rate of factor substitution and that Q and Z are required to be used for any output level.

(A) One additional unit of Q for two additional units of Z

(B) One additional unit of Z for two additional units of Q

(C) Two additional units of Q and two additional units of Z

(D) Three additional units of Z and six additional units of Q

(E) Not enough information is given to find the least cost combination of factor inputs.

108. What is a possible cause for a falling real GNP over a period of time?

(A) A general fall in the value of output through changes in quantities produced.

(B) A general increase in prices

(C) An increase in the value of output produced and a general increase in prices

(D) A or B

(E) A, B, or C

109. Long run production moves along an expansion path which is defined as

(A) a locus of points showing changes in the products' supply and demand curves in equilibrium over time.

(B) a curve showing rates of factor substitutability.

(C) a curve showing diminishing utility of factor substitution.

(D) a locus of points showing tangency between short-run isocost and isoquant curves.

(E) all of the above.

110. A linear homogeneous production function would reveal

(A) constant returns to scale.

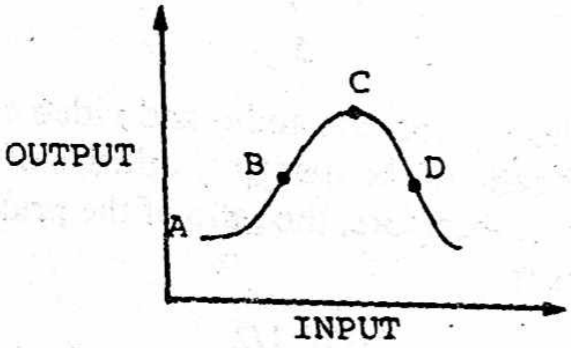
(B) increasing returns to scale.

(C) decreasing returns to scale.

(D) doubling all inputs would more than double output.

(E) an increasing marginal product.

Use the diagram below to answer question 111.



111. Which of the following is a true statement based on the production curve above?

(A) The marginal product curve peaks at point B.

(B) At point B, total product begins to increase at a decreasing rate.

(C) At point B, producers might want to consider building larger capacity.

(D) Returns to scale are increasing from C to D.

(E) From A to B, the producer is experiencing decreasing returns to scale.

112. The marginal utility curve for audio cassette tapes and video cassette tapes for consumer A is presented below (where MU_A and MU_V are the marginal utility for audio and video tapes, respectively).

MU_A	MU_V
1	10
3	7
5	8
6	6
8	5

Consumer A decides to consume audio and video cassettes at the point where the ratio of the marginal utilities of these two goods is equal to one; therefore, the ratio of the price of audio tapes to video tapes is

(A) 1

(B) 5/8

(C) 8/5 →

(D) 1/2

(E) 3/2

113. When a relatively large sample is taken from a normal population, it is possible to estimate that the population mean falls within a confidence interval with a given probability. Which of the following is NOT a reason that the above type of confidence interval estimate can be made?

(A) Data from large samples are good estimators of population characteristics.

(B) The sample statistics taken from many samples in a normal population are normally distributed.

(C) Of the many samples that can be taken from a large population, all will yield the same sample statistics.

(D) All normal probability distributions can be reduced to the standard one when Z (the standard normal deviate) can be used.

(E) For many sample statistics chosen from an infinitely large amount of samples, almost all of the observations will fall within ±3 standard deviations from the mean.

114. Which of the following, *ceteris paribus*, could be credited with contributing to an increase of the U.S. Merchandise Trade Balance deficit (measured in dollars) in the presence of a devaluing dollar?

(A) A decrease in the dollar import price paid

(B) An increase in the dollar export price received

(C) An elastic elasticity of export demand given a falling U.S. export price in terms of foreign currency while at the same time this export price is rising in terms of dollars

(D) An inelastic elasticity of import demand given a rising dollar import price paid

(E) All of the above would be credited with contributing to a decrease in this deficit.

115. Short-term capital flows between countries respond to:

I. Interest differentials between countries

II. Expectations about changes in the rate of exchange

III. Needs for trade financing

(A) I only

(B) I and II

(C) II only

(D) II and III

(E) I, II, and III

116. If the price of factor A is $6.00 per hour, and its marginal product is 10 units, and the price of factor B is $5.00 and its marginal product is 9, the producer is likely to

(A) hire more of A and less of B.

(B) hire more of B and less of A.

(C) start paying factor A more.

(D) try to use factor B more productively.

(E) hire more of both A and B.

117. One advantage of a decline in the value of the dollar would be that

(A) Americans could buy more abroad with the same amount of money.

(B) it could have an advantageous affect on the trade deficit.

(C) it would definitely help major U.S. importers.

(D) financeers who buy and sell dollars in international markets would want more dollars.

(E) none of the above.

118. Which of the following would NOT account for an increase in the price level?

(A) An increase in the nominal supply of money, with no change in productivity.

(B) An increase in the velocity of money, with the money supply constant.

(C) An increase in aggregate demand at a lesser rate than the increase in the supply of money.

(D) Increases in the supply of money, commensurate with productivity.

(E) Increases in costs of factors of production.

119. The effectiveness of monetary policy as a countercyclical device during times of recession is dependent upon:

(A) the business community's willingness to borrow at lower interest rates

(B) the willingness of Congress to vote for lower interest rates

(C) the need for central bankers to refrain from lending with excess reserves

(D) the extent of the international causes of the recession

(E) A and D

120. When the Treasury transfers money from its commercial accounts to its Federal Reserve accounts, the effects

(A) expand the money supply.

(B) cause a multiple contraction of demand deposits.

(C) cause no significant changes in demand deposits.

(D) cause a dual interest rate.

(E) cause M_2 to increase.

121. A consumer who is on his budget curve, but not on his highest attainable indifference curve, will not achieve optimality because

(A) this person would definitely be consuming more of both commodities to achieve optimality.

(B) money income is greater on the higher indifference curve.

(C) the amount of one commodity this person is willing to give up to consume more of the other is not reflected at this point.

(D) the person could be achieving a higher level of total satisfaction.

(E) although the marginal rate of substitution and price ratio is equal at this point, there is another (better) level of satisfaction.

122. The XYZ corporation produces two inputs, X and Y. The production function is

$$\text{Output} = 9X + 3Y$$

Find the maximum feasible region for inputs of X and Y, given the following constraints:

$$3X + 2Y \leq 8$$

$$2X + 4Y \leq 10$$

$$X \geq 0 \quad Y \geq 0$$

(A) $Y = 1\,3/4$ and $X = 3$

(B) $Y = 1\,7/8$ and $X = 2/3$

(C) $Y = 5/6$ and $X = 7/8$

(D) $Y = 1$ and $X = 2$

(E) $Y = 0$ and $X = 2\,2/3$

123. Real interest rates rise when

(A) the market rate of interest increases at a rate greater than the increase in the price level.

(B) the market rate of interest increases at the same rate as the price level.

(C) the market rate of interest increases at a rate less than the increase in the price level.

(D) the implicit price indicator and the yield of Treasury bonds increase by the same amount.

(E) none of the above.

124. The debt to equity ratio is a good indication of

(A) the firm's profitability.

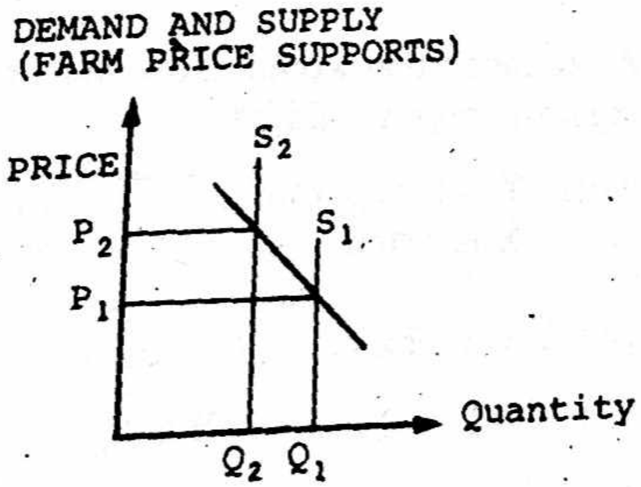
(B) the firm's leverage.

(C) the firm's liquidity.

(D) net sales to net worth.

(E) whether or not a firm has excess inventory.

In the diagram below, S_1 shows the supply of a farm commodity before a farm price support program has been implemented. S_2 shows supply after the program is in effect. Use the diagram to answer questions 125 and 126.



125. Which of the following will be true of the farm price support program?

(A) Farmers are allowed to produce more, thereby gaining higher total revenue.

(B) The supply of farm commodities is elastic in the short run and therefore total revenue will incresase.

(C) Revenue from P_2 x Q_2 is greater than revenue from P_2 not Q_2.

(D) Revenue from P_2 x Q_2 is greater than revenue from P_1 x Q_1.

(E) Not enough information to say what will happen to the farmer's total revenue.

126. In the short run, the supply of farm commodities is

(A) elastic because farmers can always produce more.

(B) similar to the supply of bicycles in a factory operating at less than full capacity.

(C) inelastic because this year's crop is fixed.

(D) immaterial because farmers can hedge.

(E) determined by the commodities exchange.

127. An equation that would allow an increasing and then decreasing cost curve would be

where Y is cost per unit
X is output

(A) $Y = a + bx$ $(a > 0)$

(B) $Y = Bx$ $(B > 1)$

(C) $Y = a/x$ $(A > 0)$

(D) $Y = a_0 + a_1.x + a_2x^2$ $(a_2 < 9$, and $a_1, a_2 > 0)$

(E) $Y = \log_b x$

128. International trade agreements by cartels

(A) exert monopolistic types of influence.

(B) result in the best possible resource allocation for all countries.

(C) lead to price deregulation.

(D) cause greater total world output of commodities.

(E) generally happen in industries with limited supply.

129. Prices tend to be inflated during wartime because

(A) guns cost more than butter.

(B) there is competition for fully employed resources.

(C) the Consumer Price Index is calculated differently in wartime.

(D) the cost of government is not included in the CPI.

(E) fewer people are living on fixed incomes.

130. If people start eating more fish and chicken to reduce their intake of cholesterol, and the importation of Canadian pork is restricted due to a steroid problem, what will happen to meat prices in the U.S.?

(A) The prices of chicken, pork and fish will go down.

(B) The prices of chicken, pork, fish and beef will go up.

(C) There will be no substantial effect on prices.

(D) The price of pork will go down, while the prices of chicken and fish will go up.

(E) Turkey prices will drop.

131. Sales taxes are generally considered to be

(A) proportional taxes.

(B) regressive taxes.

(C) progressive taxes.

(D) indirect taxes.

(E) excise taxes.

132. If income distribution figures show bipolar disturbances, this would be an indication that

(A) lower and upper classes are becoming relatively smaller.

(B) the middle class is becoming relatively smaller.

(C) lower classes are becoming larger at the expense of upper and middle classes, thus indicating downward pressure on wages.

(D) income distribution has no relationship to upper, lower and middle classes.

(E) the gross national product is increasing.

133. In the Soviet Union, the term *glasnost* refers to

(A) strengthening the government planning function.

(B) removing all vestiges of capitalism in the U.S.S.R.

(C) producing more of a government-private sector mix.

(D) producing more Soviet weaponry.

(E) reducing all foreign influences.

134. President Reagan's 1981 tax cuts resulted in

(A) a hefty budget deficit in subsequent years.

(B) an increase in federal revenues.

(C) an increase in federal defense spending

(D) revenue neutrality.

(E) pushing people into lower tax brackets.

135. Japan's low interest rates in the mid 80's were due to

(A) high rates of domestic savings.

(B) a decrease in Japan's exports.

(C) increases in the U.S. deficit.

(D) relatively low international exchange rates for the yen.

(E) high rates of domestic spending in Japan.

GRE ECONOMICS
TEST III

ANSWER KEY

1. C
2. C
3. B
4. D
5. E
6. A
7. D
8. B
9. D
10. E
11. B
12. B
13. C
14. B
15. B
16. E
17. A
18. E
19. C
20. D
21. 6
22. D
23. B
24. E
25. C
26. B
27. C
28. E
29. B
30. D
31. E
32. C
33. A
34. A
35. D
36. C
37. C
38. E
39. C
40. B
41. E
42. D
43. A
44. C
45. C
46. D
47. C
48. A
49. A
50. A
51. E
52. A
53. D
54. C
55. B
56. B
57. D
58. A
59. D
60. D
61. D
62. C
63. D
64. C
65. A
66. A
67. C
68. A
69. B
70. B
71. C
72. B
73. A
74. E
75. A
76. D
77. D
78. A
79. E
80. B
81. D
82. B
83. B
84. D
85. C
86. D
87. D
88. B
89. E
90. B
91. B
92. E
93. D
94. D
95. A
96. B
97. C
98. A
99. A
100. C
101. B
102. B
103. A
104. A
105. C
106. C
107. A
108. E
109. D
110. A
111. B
112. A
113. C
114. D
115. E
116. B
117. B
118. D
119. E
120. B
121. D
122. E
123. A
124. B
125. E
126. C
127. D
128. A
129. B
130. B
131. B
132. B
133. C
134. B
135. A

GRE ECONOMICS TEST III

DETAILED EXPLANATIONS OF ANSWERS

1. (C)

Keynes disagreed with the classical theory that there is an automatic tendency toward full employment, and he believed the economy could stagnate at less than full employment. (A) describes the classical theory. Although (A) and (B) could occur together, one does not result from the other. Interest rates are not directly affected by GNP. (E) describes the classical theory.

2. (C)

This is an important national income accounting identity; the income from producing GNP = expenditures on GNP. (A) is true, but does not reflect the meaning of the statement. (B) is the same as A. (D) [GNP–taxes=NNP] is the same as A. And (E) is true, but does not reflect the meaning of the statement.

3. (B)

At equilibrium, D=S, therefore:

$$100-6P = 28+3P$$
$$9P = 72$$
$$P = 8$$

Let Q denote the quantity of computers bought and sold at equilibrium.

Then $Q = 100-6(8) = 52$, or equivalently,

$$Q = 28+3(8) = 52$$

4. (D)

To find an extremum, which for this equation is a maximum, it is necessary that the marginal revenue (MR) for the Q that is produced and sold be equal to zero. Satisfaction of this condition implies we can do no better by choosing an output level that is greater or less than this Q. The condition in algebraic terms will yield the answer as:

$$MR = b - 2Q = 0$$

or

$$Q = \frac{b}{2c}$$

5. (E)

$$Y = 14.52 + 1.12\ (\$21{,}000) + 2.20\ (3{,}000{,}000)$$
$$Y = \$6{,}683{,}534.52$$

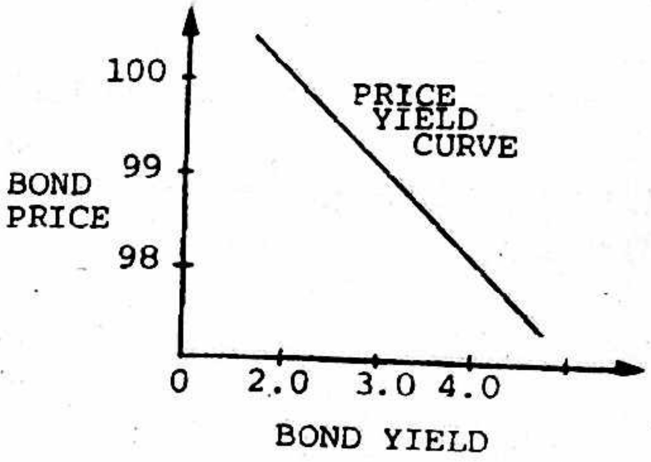
6. (A)

Price x Quantity = Total Revenue

$$\$800Q = \$56{,}000$$
$$Q = 70$$

7. (D)

A bond with a face value of $100, maturing in one year, with a 3.5% rate of interest, pays about 4.5% if the price of the bond at the time of purchase is $99.00. The same bond with a purchase price of $101 pays about 2.5%.



8. (B)

327.7–324.3 = 3.4, so the percent change $= \frac{3.4}{324.3} =$ 1.05% increase.

9. (D)

When the Department of Labor (DOL) defined the unemployment rate, it included among the unemployed those persons receiving unemployment compensation. People who live in institutions and do not work are not counted as unemployed by the DOL. Those persons over 16 (not 18) are considered to be in the labor force by DOL definition. Only those persons who are actively seeking employment are counted in the statistic. All persons who do not work include many who choose not to work, or who have "given up" looking for a job. These people are not included in the unemployment statistic.

10. (E)

The correct formula for the standard deviation is:

$$S_x = \sqrt{\frac{\Sigma (x - \bar{x})^2}{n - 1}}$$

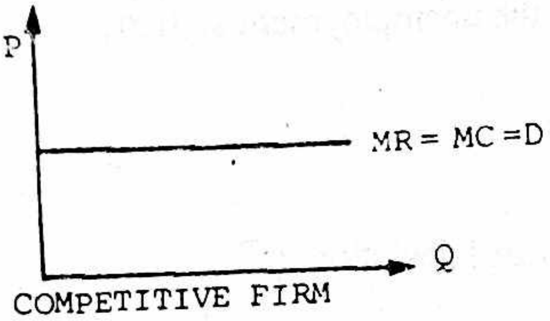
(D) is an alternate correct definition. (B) is actually the difference between extreme items in a group, while (C) is the square of the standard deviation.

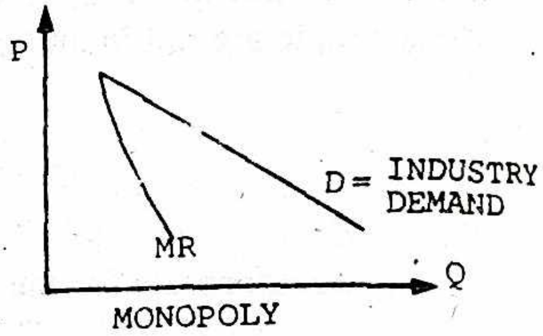
11. (B)

Foreign travel would become more expensive, because it would take more dollars to purchase foreign currencies. (A) is wrong because it would have a stimulating effect on exports and the balance of payments. A dollar would buy fewer yen, international indebtedness of the U.S. to other countries would increase, and goods purchased with U.S. dollars in other countries would become more expensive.

12. (B)

A horizontal demand curve characterizes a purely competitive firm, not a monopoly. (A), (C), (D), and (E) are all true of a monopoly. A monopoly is a market in which one, and only one, firm operates in an industry. Marginal revenue is always less than price. The monopolist must reduce his price to increase quantity sold, illustrated by a downward sloping demand curve.





13. (C)

It was not the Kennedy administration, but rather the Reagan administration which defined and implemented supply side economies. (A) George Gilder wrote a book in the early 80's called *Wealth and Poverty*, which describes supply side economies. (B) David Stockman was the Director of the Bureau of the Budget in the early 80's and helped to implement supply side economics. (D) Theorists believed that if money were concentrated in the hands of those who create jobs, money would trickle down to other layers of society. (E) is also true.

14. (B)

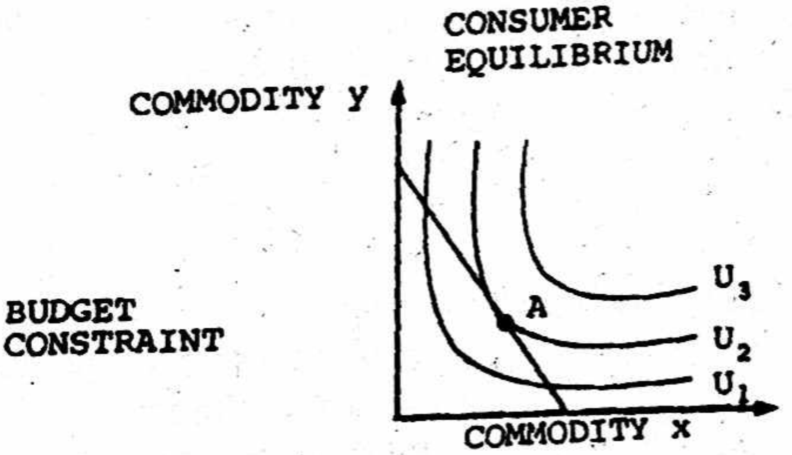
When the discount rate is increased, banks reduce borrowing and use the sale of bonds to replenish their reserves, depressing their prices. In (E), bond prices are related to both of these actions by the FED.

15. (B)

Present Value = $\frac{10{,}000}{1.07}$ = 9346

16. (E)

Consumer equilibrium is the highest indifference curve attainable with a given budget constraint. (See the diagram below).


CONSUMER
EQUILIBRIUM
COMMODITY Y
BUDGET
CONSTRAINT
A
U_3
U_2
U_1
COMMODITY X

(A) Answer shows equilibrium in the product market, (B) shows equilibrium in the labor market, (C) is not possible without an increase in income, and in (D) all points on an indifference curve indicate consumer satisfaction.

17. (A)

$AC = 350 + \frac{9,000}{Q}$. At the break-even point, average revenue or price (P) is equal to average cost, thus

$$P = 500 = 350 + \frac{9000}{Q} = AC$$

or

$$150Q = 9000$$

or

$$Q = \frac{9000}{150} = 60$$

18. (E)

The positive sign of the coefficient of x, and the negative sign of the coefficient of G, show that a more expensive computer commands a higher price when sold used, and the older the computer, the less it will command in the used market. (A) is generally true, but not the best explanation of the equation, (B) and (C) are not true and, (D) is not true as 96% of the variation is explained by the equation.

19. (C)

Adam Smith believed that each country producing what it does best, or relatively better, and trading for those commodities produced to advantage elsewhere, enhanced each nation's wealth and world wealth. (A) and (D) would interfere with the types of specialization and trade described in (C). Smith stated that countries should produce those goods that they have an absolute and comparative advantage in, a comparative advantage being the least relative disadvantage.

20. (D)

For a sample statistic, $\bar{\theta}$, to be unbiased it must be true that $E(\bar{\theta}) - \theta = 0$, where $\bar{\theta}$ is the population statistic which θ is attempting to estimate. Calculating the expected values of the proposed estimators (A), (B), and (C), we find they equal $(n-1)\sigma^2$, $(n-1)\sigma^2/n$ and $n(n-1)\sigma^2$, respectively.

Therefore (A), (B), and (C) do not provide us with an unbiased estimator for σ^2. However, (D) does since the expected value of this sample statistic does equal σ^2, under the assumptions given.

21. (B)

It is commonly understood that the velocity of money is the rate at which the money supply is turned over, or spent, on GNP in a given year. That is, if GNP were 800 and the money supply were 200, velocity would equal 4, or the money stock would be turned over four times in a year. Answers (A), (C), (D), and (E) are not related to the velocity of money.

22. (D)

Calculating value added at each stage of production eliminates the problem of counting the product more than once. (A), (C), and (E) would involve double counting. The GNP deflator is used to remove the effects of inflation and not the potential of double counting.

23. (B)

By using any two pairs of income and consumption figures, two equations can be set up and solved simultaneously to find the values of the intercept (X) and the coefficient of Y. Using the first two sets:

$335 = X + Y(350)$

and, $290 = X + Y(300)$

$\rightarrow$ $45 + Y(50)$

$\rightarrow$ $Y = .9$

and, $335 = X + .9(350)$

$\rightarrow$ $X = 20$

or, $C = 20 + .9Y$

24. (E)

By substituting the consumption function for C into the equation, one can solve for Y.

$$Y = C+S = 20 + .9Y + S$$

$$\rightarrow \quad Y = 20 + .9Y + 25$$

$$.1Y = .45$$

$$Y = 450$$

25. (C)

The sample mean of a normally independent distributed population is itself normally distributed with a sample mean of μ (equal to the population mean) and a standard deviation equal to the population standard deviation, σ, divided by the square root of the number of observations. Therefore:

$$P\left(-1.65 \leq \frac{\bar{x}-\mu}{\frac{\sigma}{\sqrt{n}}} \leq 1.65\right) = 90\%$$

where $\underline{P}$ ( ) is the probability operator
$\bar{x}$ is the sample mean
N is the number of observations
upon which the sample mean is based

We know $\bar{x} = 7$, $\sigma = 1.3$, and $N = 100$, hence:

$$P\left(-1.65 \leq \frac{7-\mu}{\frac{\sigma}{\sqrt{n}}} \leq 1.65\right) = 90\%$$

or $P(-.13\,(1.65) \leq 7-\mu \leq .13\,(1.65)) = 90\%$

or $P(7 - .13\,(1.65) \leq \mu \leq 7 + .13\,(1.65)) = 90\%$

The 90% cofidence interval is then

$$6.7855 \leq \mu \leq 7.2145$$

26. (B)

The IS curve is a locus of points showing all possible levels of income and interest for a given savings (or consumption) schedule, where investment is equal to savings, investment decreases with the rate of interest, and savings is a positive function of income. There are many levels of interest and income consistent with product market equilibrium. The IS curve is for the product market and not the money market. This is contrary to the correct assumptions. (E) is true but not related to the question.

27. (C)

The speculative demand for money is also called "liquidity preference" and represents money set aside for future investment purposes. (A) and (D) are the transactions demand, while (B) and (E) represent the precautionary demand.

28. (E)

Firms choose to locate where they receive the greatest benefits in relation to costs of doing business at that location. Although taxes are often part of the location decision, most studies show that a low tax base alone does not necessarily attract firms because a low base is often associated with poor services or infrastructure investment. Costs of raw materials where applicable are a consideration, and are figured into the costs and benefits of a location, but that is not the only criterion.

29. (B)

The high interest rates and low transactions demand for money indicate that there is pressure on the money supply, which would increase the rate at which money is spent.

30. (D)

Income added to GNP is multiplied by some amount when investment is increased through a spending and re-spending process. (A) and (E) can be true but do not define the multiplier. (B) and (C) are not true.

31. (E)

A change in the interest rate would cause a movement along the LM curve, but not a shift. (A), (C), and (D) all result in an expanded supply of money and a shift to the right of the LM curve. (B) would cause an increase in transactions and a shift of LM to the right.

32. (C)

A change in liquidity preference would cause the LM curve to shift, denoting a monetary cause for changes in equilibrium income. (A), (B), (D), & (E) would cause shifts in the IS curve which are known as "real" causes for changes in equilibrium income.

33. (A)

The number of tax brackets was reduced from 11 to 3 by this act. (B) is incorrect because the law only eliminates the IRA deduction in certain high income ranges. (C) is incorrect because it will be phased in over 1987 and 1988, for 1986 and 1987 tax years. (D) is incorrect because preliminary guesses are that the bill will hit hardest in middle income families. (E) is incorrect because corporate tax rates were reduced.

34. (A)

Bryan ran in and lost the presidential election of 1896. He campaigned on a bimetalism platform, encouraging the use of silver to back the dollar.

35. (D)

In a monopolistic or oligopolistic industry, firms influence price, but not in free competition. (A), (B), (C), and (E) are true of industries that operate under free competition.

36. (C)

For a competitive firm, MR equals the going market price. At the output level where MC = MR = P, we see that P>AC, therefore we know that this firm is earning positive profits, which over the long run will induce entry of firms in the industry. Though (B) is true, the diagram does not indicate this. (D) and (E) are simply not true.

37. (C)

A necessary condition when positive output is produced for profit maximization is that the producer hire an additional input up to the point where the additional revenue created by it being hired is exactly equal to the cost of hiring the input. That is, the producer will pay the input the additional revenue that it creates, hence we know (A) and (D) cannot be the correct answer.

For a perfectly competitive producer, the additional revenue that it creates is simply the price per unit of output multiplied by the input's marginal product, i.e. the value of its marginal product. For a monopolist, however, the additional revenue created by an input being hired does not equal its marginal product (E). To see this and to determine the correct answer from the remaining choices, (B) and (C), note that:

$$TR = P \times Q$$

where TR is total revenue
P is price per unit, which, for a monopolist, is a function of the output produced and sold.
Q is quantity of output, which is a function of the amount of each input used in the production process.

The additional revenue created by hiring another unit of an input, say x_i is then

$$\frac{dTR}{dx_i} = \frac{dP}{dQ}\frac{dQ}{dx_i} + \frac{PdQ}{dx_i}$$

or

$$MR = P\left(1 + \frac{1}{\epsilon}\right) MPx_i$$

where ϵ is the elasticity of demand faced by the monopolist
MPx_i is the marginal product of x_i, $\frac{dQ}{dx_i}$
MR is the marginal revenue of using other unit of
x_i, dTR/dx_i.

Since for a monopolist $1 + \frac{1}{\epsilon}$ will always lie between 0 and 1, $MR < MPx_i$, therefore we see that the monopolist pays the input less than $PMPx_i$, the value of its marginal product.

38. (E)

High rates of interest make it costly for corporations to borrow and thus to finance capital investment.

39. (C)

The simple Cobb-Douglas production function exhibits constant returns to scale, which implies that:

$$Q = MP_L L + MP_K K$$

where Q is output
MP_L is marginal product of labor
MP_K is marginal product of capital

When input markets are perfectly competitive, inputs are paid in real terms of their marginal product. Therefore, the above equation can be rewritten as:

$$Q = \frac{W}{P}L + \frac{r}{P}K$$

where $\frac{W}{P}$ is a real wage

$\frac{r}{P}$ is real return to capital

dividing both sides by Q we have

$$= \frac{WL}{PQ} + \frac{rK}{PQ}$$

Capital's and Labor's share of output is defined as (rK/PQ) and (WL/PQ) respectively, or equivalently as (MP_KK/Q) and (MP_LL/Q) respectively. When we calculate (MP_KK/Q) and (MP_LL/Q) (capital's and labor's share of output),we find that capital's and labor's share of output is equal to the constant technological parameters, a and (1–a). Choices (D) and (E) are not relevant to the question, and choices (A) and (B) are not correct.

40. (B)

In certain industries like the utilities, the existence of more than one electrical generating plant, for instance, is sufficient. These industries are said to have a natural monopoly. The existence of one firm (not more than one) results in economies of scale. The existence of more than one firm generally enhances price competition, although in the case where a natural monopoly exists, many firms would be inefficient and tend to drive up prices. The existence of more than one firm would result in surplus capacity. Monopolies can serve large or small populations. AT&T once served the entire nation; a small town grocer who is the only grocer in town can also be considered to have a monopoly.

41. (E)

Monopolies, especially utilities, are generally regulated to operate where AR = LAC (insofar as they can be measured) where they earn a return on investment. Price determined for this utility at the point where MR = MC implies that ABC would be making negative economic profits, since the diagram reveals that LAC > Price at that level of output. The only way the stockholders of ABC utility would be willing to not sell out ABC is if the government would subsidize ABC utility so they could pay a dividend that equals the "going return" on capital. At the point where MC = AC the same problem exists that was true when price was set at MR = MC. The same problem again occurs with choice (C), and choice (D) is incorrect.

42. (D)

(A), (B), (C), and (E) represent arguments for higher rates to be charged.

43. (A)

World Bank loans and developmental assistance for its affiliates, the International Finance Corporation and the International Bank for Reconstruction and Development, provide aid to less developed countries. (B) provides quality of life assistance, but not economic assistance per se. The IMF exists primarily to stabilize currencies, so (C) is incorrect. (D) is incorrect as Japanese investments tend to occur in developed countries, and newly industrialized countries rather than LDC's. (E) mentions an organization which resolves labor conflicts in a world context.

44. (C)

Expected payoff = \$5,670 x .87 = \$4,932.90.

45. (C)

The condition was known as stagflation, typified by low growth rates, high interest rates, and high rates of inflation. Government spending had the potential of fanning inflation and tightened controls at the FED might have increased interest rates even further.

46. (D)

The dotted line C–C' represents an imaginary budget line, with the same slope as the new budget line LM'. Point Q shows the hypothetical change in the quantity of X demanded due to the new price ratio alone, without accounting for the reduction in income. This new budget line is tangent to II at point Q. A vertical line through Q hits the x axis at X_2. Therefore, the change in quantity consumed due to the substitution effect is $X_2 - X_1$.

47. (C)

To handle this issue, economists have developed what is known as the midpoint or elasticity formula.

The formula is written as:

$$n = \frac{\Delta Q}{\Delta P} \; \frac{P_1 + P_2}{Q_1 + Q_2}$$

when Q is quantity
P is price per unit

This formula was the average of the two prices and quantities as the base period values for price and quantity. Using the given information we then calculate:

$$n = - \left[- \frac{200}{1.00} \; \frac{7.50}{1100} \right] = \frac{2}{11} \; 7.50 \; = \frac{15}{11}$$

48. (A)

Demand is relatively elastic since its value is greater than one. Perfectly elastic demand would be represented by a horizontal line, meaning that at a certain price (and all prices below that price) demand would be infinite. Where demand is relatively elastic there is a larger proportional change in quantity than in price. Inelastic demand is less than one. Perfect inelasticity means quantity demanded will not change with a change in price.

49. (A)

The cost of financing contributes to the determination of the actual price paid by the consumer. Therefore, any adjustment of the cost of financing to increase sales is a form of price competition, not non-price competition.

50. (A)

As a factor of production is used in larger amounts in relation to another factor, its contribution to product, at the margin, declines in relation to other factors. (B) can happen, but substitution is not normally carried this far. (C), (D), and (E) can be true in certain situations, but do not represent the meaning of the statement in this question.

51. (E)

Underdeveloped nations are characterized by high population growth rates. (A), (B), (C), and (D) are all true statements.

52. (A)

A coefficient of determination close to one means that correlation exists, and knowledge of x may be helpful in predicting y. (B) is true of a coefficient of determination = 1, and (C) is true of a coefficient of determination = 0. (D) is false as correlation does not prove causality.

53. (D)

Since exports = .18GNP, imports also = .18GNP. If GNP = 10,000, .18GNP = .18 x 10,000 = 1,800.

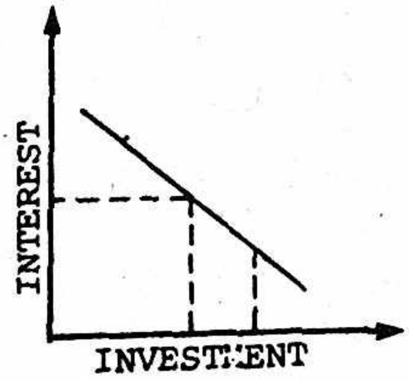
54. (C)

An indifference curve between X and Y shows what combinations of X and Y will yield the samel level of satisfaction (utility). Since we are ignoring any issue of carrying costs (of carrying more pieces of paper and/or coins versus less), a consumer will be indifferent between 20 five dollar bills or 10 ten dollar bills, 18 five dollar bills and 1 ten dollar bill or 16 five dollar bills and 2 ten dollar bills, etc. The only equation that will yield a marginal rate of substitution is 2 five dollar bills for 1 ten dollar bill.

55. (B)

Pressure on wages from unions, businesses' willingness to pass along increases in costs due to high profit margins, and shortages in some markets cause inflation in times of near full employment of resources.

56. (B)



The preceding diagram demonstrates that as the interest rate increases, investment decreases. This is true because the rate of return on investment (marginal efficiency of capital) must be adequate to compensate the businessman for the foregone opportunity of putting money out at interest. With high interest, the price of bonds would be low. High rates of interest would attract foreign capital. Demand for capital equipment would decline. High interest rates are associated with tight money.

57. (D)

If $1,000 in "new" demand deposits are created at bank A and the reserve requirement is equal to 20%, the chain of respending on loans and investment throughout the banking system could potentially cause an expansion in the supply of money equal to $5,000 or:

$$\text{The change in MS} = \frac{\text{Change in Demand Deposits}}{\text{reserve requirement}} = \frac{1{,}000}{.20} = 5{,}000$$

58. (A)

The 1968 U.S. tax surcharge and the 1975 U.S. tax rebate demonstrate that the savings rate increases with tax cuts and decreases with tax increases. Evidence suggests that aggregate demand is increased by some amount less than this multiplier when taxes are reduced. (C) is false; a given level of government spending has greater potential for increasing aggregate demand than a tax cut of the same amount.

59. (D)

Businessmen invest in capital equipment only as long as the internal rate of return is greater than the market rate of interest because they experience a loss of interest foregone on money capital when the internal rate of return is less than the market rate. (B), (C), and (E) are incorrect; investment decisions are optimal when the discounted present value of future net returns is just equal to the cost of capital equipment and when a marginal outlay of capital is equal to its Marginal Revenue Product.

60. (D)

If the rate of exchange = $\frac{.75 \text{ Canadian}}{1.00 \text{ American}}$ then

$$\frac{1.00 \text{ Canadian}}{x \text{ American}} = \frac{.75}{1.00}$$

$$x = 1.33$$

61. (D)

The required condition for an increase in the real wage is a proportionate increase in wages greater than the proportionate increase in price levels. Employers with favorable hiring conditions (many employees from which to choose) would most likely depress wages. (B) represents non-inflationary wage increases, in (C) real wages would remain the same and (E) would depress the real wage.

62. (C)

If A and B are statistically independent events, which happens to be true by assumption, the probability of (event A and event B) = the probability of A x the probability of B.

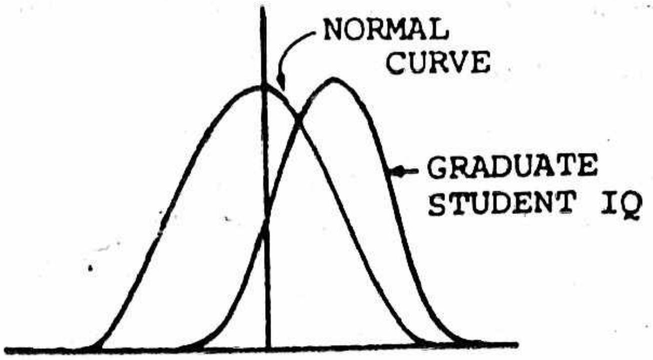
In this case, (.70) (.50) = .35 or 35%

63. (D)

Wage price controls are a way of influencing corporations and unions, which are not necessarily responsive to free market pressures.

64. (C)

Since graduate students are likely to have higher IQ's than the normal population, the distribution of their IQ's would be skewed to the right. See the diagram below.



A = POPULATION AVERAGE

65. (A)

Leakages from the system in this case will be greater than expenditures and inventories will accumulate.

66. (A)

If wages and prices fall in the same proportion, real disposable income will stay the same, but taxpayers will be in a lower bracket, increasing their disposable income. In (B) and (D) tax rates are graduated with income.

67. (C)

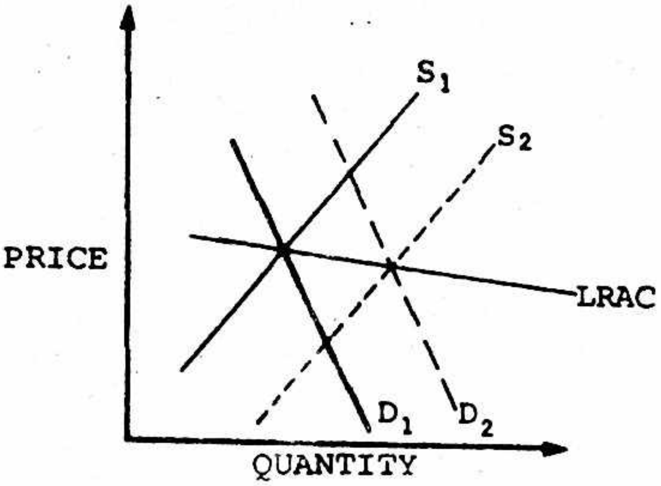
$m_1 = kY = .15(200) = 30$
$m_2 = (1/5 - k)\ Y = 10$
$M_s = m_1 + m_2 = 40$

68. (A)

$$\frac{m_1}{m_2} = \frac{kY}{(1/5 - k)Y} = \frac{3}{1}$$

69. (B)

The diagram below shows a willingness of producers to produce more at lower prices, due to unit cost decreases, over the long term:



70. (B)

The demand curve facing the individual oligopolistic firm is kinked because other firms are likely to follow a price decrease, but not a price increase.

71. (C)

Better opportunity for equal education attacks the root of the problem of income distribution, as a better educated labor force can enhance productivity, and improve wages. Food and rent price controls distort the price structure, and can result in shortages, black markets and waste. (B) could be inflationary if health resources are in short supply.

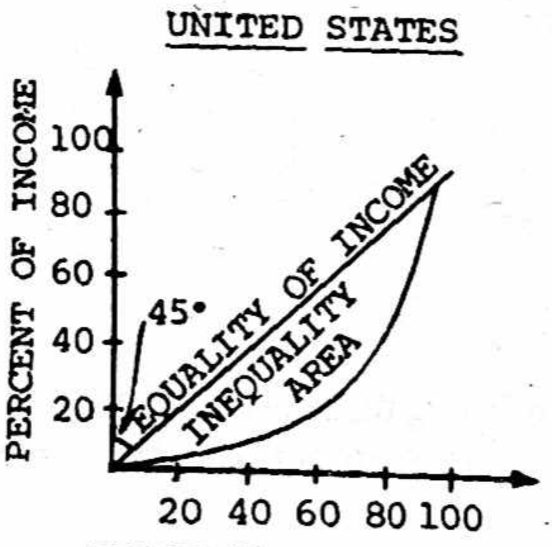
It could result in the overproduction of health services at the expense of another sector of the economy. (D) would tend to "tax the rich" and could result in a reduction in savings and capital formation. (E) could result in lowered productivity.

72. (B)

This is the definition of Pareto optimality. Although situation (A) is a socially ideal place for the firm to operate, the monopoly is worse off at that point. (C) is social optimality as defined by Kicks. (D) is social optimality as defined by Samuelson and some others. (E) is ideal, but not Pareto's optimality.

73. (A)

This is the definition of the Lorenz curve, as shown in the diagram below. All other answers are true, but do not define the Lorenz curve.



74. (E)

The factors are not substitutable. Two widgets can be produced with 5y and 3x, but along the horizontal line, more x can be used, with 5y, but the increase in x does not cause a decrease in the use of y as would happen with factor substitution. (A) would be a straight line.

75. (A)

The student could generate the table of values below by extrapolating values of X and Y from the diagram, and using the method of least squares, solve the two equations simultaneously:

$$na + b\Sigma X = \Sigma Y$$
$$a\Sigma X + B\,\Sigma X^2 = \Sigma XY$$

and $a = 4.1,\ b = -3/10$

The student would also decide to look for an equation with a negative slope, and an intercept of about 4 which leaves equations (A), (C) and (D), and determine the slope to be –3/10 from inspection.

Table of Values

X	Y	XY	X^2	Y^2
1	3	3	1	9
2	5	10	4	25
3	2	6	9	4
4	4	16	16	16
5	2	10	25	4

$\Sigma X=15$ $\Sigma Y=16$ $\Sigma XY=45$ $\Sigma X^2=55$ $\Sigma Y^2 = 58$

76. (D)

The definition of a regression line is the line showing the smallest sum of squares of deviations from the mean. The β statistic (Slope) can be positive or negative. Information derived about Y from X is an estimate of the value of Y at that point. In (C), the line describes the relationship between X and the mean of the distribution of Y, and in (E) estimates of β and $\propto$ are constants.

77. (D)

This type of behavior would corroborate that as income increases, families purchase even more financial assets. A negative correlation would indicate that families acquire fewer (not more) new financial assets as the size of their asset holdings increase. (B) would indicate only that families use some investments for tax deductions, but would not be an indication of any change in asset holding rates. In (C), families would be dissaving. (E) would indicate that higher income families have a propensity toward dissavings.

78. (A)

If this were true, it would indicate that knowledge of X would be no more helpful in predicting Y than taking an average of Y. (B) would indicate regression. Biased and unbiased estimates of α and β would reflect on the usability of the regression equation, but not on the existence of regression or no regression. α is an intercept and does not determine regression.

79. (E)

The definition of the paradox of thrift is (E). (A) and (B) are false, (C) and (D) are true but are not explained by the paradox of thrift.

80. (B)

If government money is used for commodities in scarce supply, it will inflate prices for those commodities, and fail to stimulate demand. The government multiplier is greater than the tax multiplier. (C) is false. Although people receiving transfer payments do not produce goods and services, the money they spend will stimulate demand for such. (E) is a benefit from government expenditures and not a drawback.

81. (D)

The slope is $= \frac{\Delta P}{\Delta Q} = (15-5) \Big/ (200-1000) = \frac{10}{-800} = \frac{-1}{80}$

82. (B)

When mortgage interest rates go up, housing prices have a tendency to go down since the actual price paid for a home will increase(that is price that includes finance charges). This would shift the demand curve for houses, and result in a lower equilibrium price.

83. (B)

People tend to want more money in dollar terms (nominal terms) as the benefits of more real money balances are not as readily apparent. (D) is a true statement and should lead households to value real balances over nominal balances which they do not do because of money illusion. In today's world, most people have inflationary expectations. The reverse of (A) and (C) is true.

84. (D)

As long run market interest rates fall, investor preferences will be shifted from stocks, bonds, and securities to money. Inflationary trends would tend to cause investors to hold assets other than money. Government securities are "gilt-edged" due to their guarantees and can be used as a substitute for money. Bond prices fall when interest rates rise, and investors prefer bonds to money.

85. (C)

Traditional theory states that government spending, lowered taxes and easy money policy have a likelihood to stimulate demand.

86. (D)

Allocative efficiency occurs when society produces that combination of goods that people prefer, given their incomes. Technical efficiency occurs when society produces maximum ouptut using the best combination of scarce resources. (B) does not describe allocative efficiency correctly, and only refers to consumer A. (C) is true, but does not define the term.

87. (D)

Long run profit is maximized because MR=MC and at the same time the plant is operating at its minimum possible long run average cost. Note: The seller is not operating at the lowest level of LRAC (point B) because the downward sloping demand (AR) curve for monopolistically competitive markets makes this point impossible to achieve. Attempts to operate at point B would be unprofitable because average revenue (price) is less than average cost at this point. The firm is not earning excess profits because price is equal to average cost, (E).

88. (B)

Using foreign capital to fund a growing U.S. Federal deficit will tend to prevent interest rates from rising and therefore investment will tend not to change. The other choices tend to result in destablizing production and demand decisions, directly or indirectly, through interest rate effects induced by the borrowing of foreign capital.

89. (E)

Consumers will purchase more of Y and Z because they are both substitutes for X. Consumption of Y will increase by more than consumption of Z, because Z is an inferior good and incomes have not changed. The price of X will definitely rise due to shortages as well as prices of Y and Z due to the increased demand for these goods.

90. (B)

The classicists argue that in periods of less than full employment, the LM curve would shift to the right until equilibrium is restored at full employment. (A) is the Keynesian liquidity trap argument. According to the classicists, at less than full employment the real value of money would increase. Interest rates would decrease and wages and prices would fall at less than full employment.

91. (B)

Zero net investment means that new investment less depreciation is zero, and that the capital stock remains intact. Incidentally, this is not easily measured because the capital stock is valued at original cost.

92. (E)

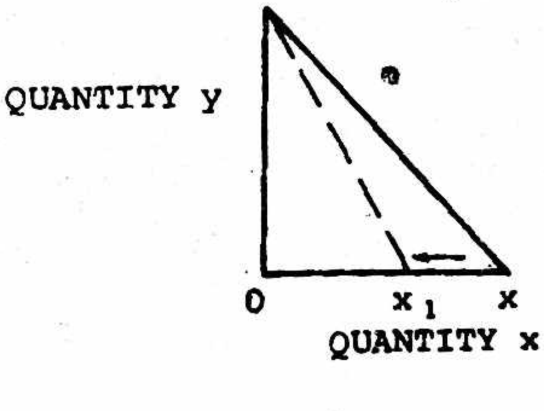
If the central bank buys bonds in the amount of $10 million from the Treasury, it creates $10 million in "new money," the effect of which is identical to the Treasury printing this amount of money. Conversely, if the central bank buys $10 million in bonds from commercial banks, it creates less money because some must be used as reserves. (A), (B), and (D) reduce the supply of money.

93. (D)

A type I error concludes that the null hypothesis is false when it is, in fact, true. The standard error of the mean is the standard deviation of the sampling distribution of X. A type II error occurs when statisticians conclude that the null hypothesis is correct when it is, in fact, false. The error curve is a curve showing probabilities of a type I or type II error. The error probability is plotted on the error curve.

94. (D)

In the case of an increase in the price of X, total consumption would decrease, and the new budget line, which would be steeper, would be represented by $Y–X_1$. (A) and (B) only happen with changes in income.



95. (A)

$$M = (P_xX) + (P_yY)$$

$$999 = 7X = 3Y$$

$$999 - 7X = 3Y$$

$$\frac{999}{3} - \frac{7X}{3} = \frac{3Y}{3}$$

$$333 - \frac{7X}{3} = Y$$

96. (B)

A simplified formula for finding the effects of a tax cut is:

$$\Delta Y = \frac{-b\Delta T}{1-b}$$

where ΔY = change in income
b = MPC
ΔT = change in tax level

In this case $\Delta Y = \frac{-.75(-20)}{1-.75} = 60$

$$Y + \Delta Y = 180 + 60 = 240$$

97. (C)

A growth formula derived from the Harrod-Domar model is:

$$\text{growth rate} = \frac{\text{average propensity to save}}{\text{capital/output ratio}}$$

It should be evident after inspection that as the capital to output ratio decreases, the growth rate increases. (A), (B), (D), and (E) enhance economic growth.

98. (A)

Tax cuts pass through the hands of consumers and some of the money is saved (not spent), whereas 100% of government expenditures are injected into the spending stream. (B), (C) and (E) are false. (D) is true, but does not explain the greater impact of government spending.

99. (A)

Before the tax was imposed, the industry was selling 20 million units at a price of $11.00 each with a total revenue of $220 million. After the tax, revenue (to the industry) is $180 million, representing a loss of revenue of $40 million.

100. (C)

The government collects $2.00 per unit in taxes. Total sales are $15 million, giving the government $30 million in taxes.

101. (B)

The Treasury needs to borrow money to finance a debt and wants to do so at the lowest interest rates possible, but monetary restraint and tight money are inconsistent with this goal.

102. (B)

If the price cross elasticity is positive, the two goods are substitutes. The reduction in the price of one commodity causes a relatively significant drop in the consumption of the other commodity.

103. (A)

The real interest rate (R) is the money interest rate, minus the percent rise (or drop) in inflation.

$$R = 6\tfrac{1}{2} - (-4) = 10\tfrac{1}{2}$$

104. (A)

When the FED purchases bonds, it pays for them with money which increases MS. (B), (C), and (D) are contractionary moves by the FED. (E) is fiscal policy, not monetary policy.

105. (C)

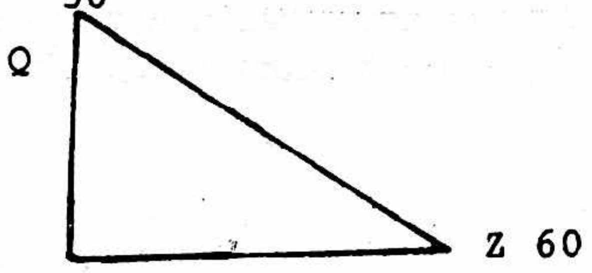
Investors need a greater return on investment with inflationary expectations to achieve a perceived real and positive return on investment, which pays off in the future. (E) is true but only after inflation is a reality.

106. (C)

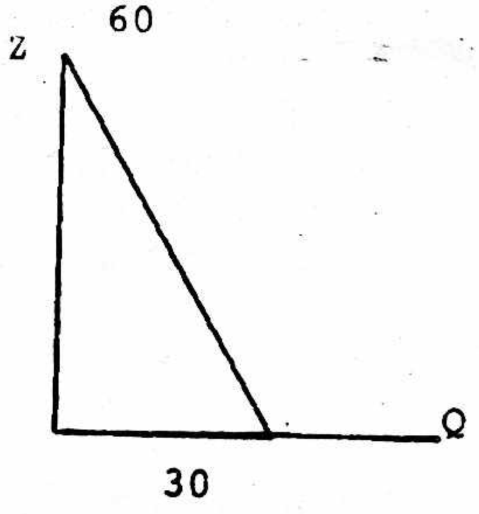
The definition of demand-pull inflation is an increase in aggregate demand, with increasingly limited available resources. (B) would not be inflationary or deflationary. (A), (D), and (E) are all examples of cost-push inflation.

107. (A)

A graph of the isocost curve would look like:



or



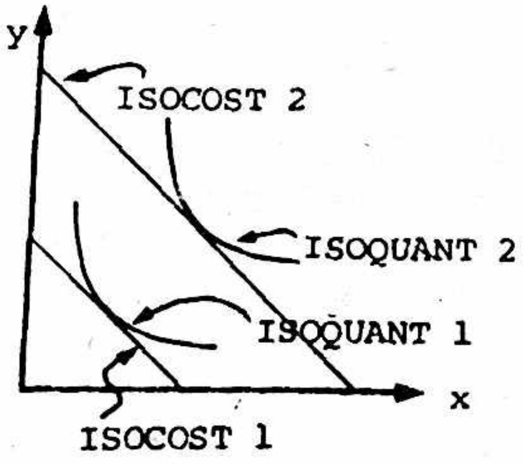
In either case the ratio of prices along the isocost curve is 2 units of Z for 1 unit of Q. Microeconomic theory states that the least cost combination of factor inputs occurs when the marginal rate of substitution (MRS) is equal to the ratio of prices. Therefore, to minimize costs MRS must be one Q for 2Z.

108. (E)

Real GNP is calculated as the current value of GNP divided by an index that will capture the general movement of prices. It is then obvious that (D) would lead to a fall in a measure of real GNP. It is also possible that real GNP could fall if the value of GNP, as well as the general level of prices, rose at the same time (C). This would occur if the general level of prices increased at a faster rate than quantitites decreased. Therefore since (A), (B) and (C) can be true, the answer is (E).

109. (D)

The expansion path shows increases in production, as factor inputs and budgets increase. (A) would show changes in market equilibrium. (B) is an isoquant, (C) is an expansion path which can show increasing, decreasing, or constant returns to scale.



110. (A)

In a linear homogeneous production function, a proportionate change in all inputs produces a proportionate change in output. For example, a 75% increase in inputs would result in a 75% increase in output. (B), (C) and (D) are inconsistent with answer (A). (E) is incorrect as a linear homogeneous production function can have a decreasing, constant, or increasing marginal product, depending on what level of output is currently being produced.

111. (B)

Point B is an inflection point, at which the rate of change changes. The curve peaks at C, therefore, this would be a more appropriate decision at point C. In the range (D), returns to scale are decreasing. From A to B producers experience increasing returns to scale.

112. (A)

For a utility maximizing consumer who is subject to a budget constraint, a necessary condition for equilibrium between any two goods (given that both goods are consumed) is that the marginal rate of substitution is equal to the economic rate of substitution, i.e. the ratio of prices. We know that this consumer has decided to "consume" audio and video tapes at the point where the marginal rate of substitution is equal to one, therefore, the best answer is (A).

113. (C)

Each sample will yield a different set of statistics. (A) is true. In (B), the different sample statistics will form a normal distribution that can be reduced to the standard normal distribution in which almost all data falls within ±3 standard deviations from the mean.

114. (D)

The scenario given in (D) will result in an increasing value of imports. That is, the price is increasing but the volume of imports is not decreasing in equal proportion. This would contribute to an increasing deficit, thus (E) is incorrect. (A), (B) and (C), *ceteris paribus*, would result in a decrease in the trade deficit.

115. (E)

Capital is drawn to countries with relatively high interest rates. Capital might well flow from country X to country Y if X's currency is expected to be devalued in relation to Y's. Capital flows from countries with high trade deficits to those countries from which they have imported heavily.

116. (B)

Factor B is less costly per unit of output to use than factor A, so the firm would want to substitute B for A where this is possible.

117. (B)

Imports would become more expensive and exports less expensive, with the potential of lessening the trade deficit.

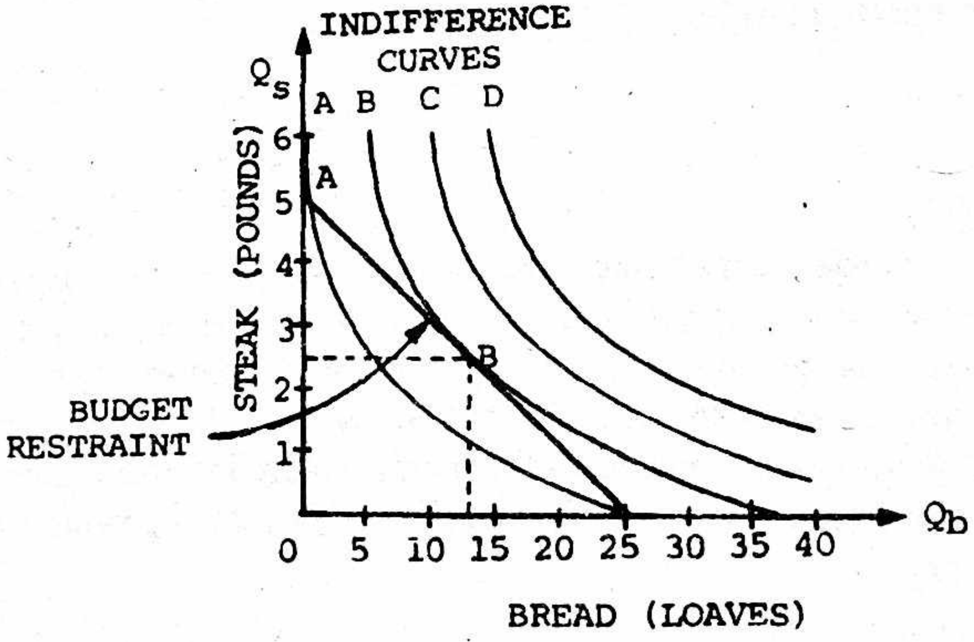
118. (D)

The government tries to increase the money supply at the same rate as productivity to prevent inflation. Increases in the nominal money supply unaccompanied by growth in GNP and demand can be inflationary. Increases in the velocity of money with the money supply constant would mean more spending and possibly inflation. Increases in aggregate demand and increases in costs of factors of production are inflationary.

119. (E)
Business must be willing to borrow at lower interest rates, and the more local the recession, the easier it is to influence. (B) The FED is independent of Congress; (C) central banker would need to lend during the recession to cause the country to climb out of the recession.

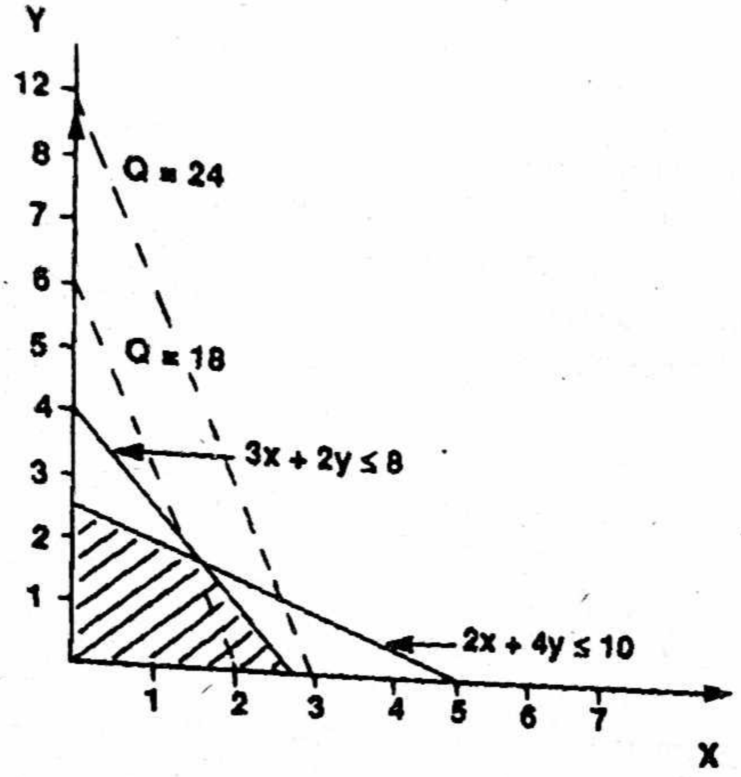
120. (B)
Since Federal Reserve Banks do not loan money to depositors, the money taken from the commercial sector causes a multiple contraction of demand deposits.

121. (D)
Compare point A with point B in the diagram below. By definition, satisfaction is greater on the higher indifference curve. (A) is untrue; this person is consuming less of commodity Y at point B than at point A, but has higher satisfaction. Indifference curves measure preference and not income. (C) is not true; every point on every indifference curve reflects this kind of trade off. (E) is not necessarily true; the definition of optimality is equality of price ratios and the marginal rate of substitution.



122. (E)

This question is asking you to find the greatest amount of output that can be produced that still will satisfy the four input inequality-equality constraints. We can solve this problem using a simple graphical approach. In the figure below, the lined area is the feasible input region.



To produce the maximum output the producer is required to choose an input combination that lies on the isoquant which is farthest away from the origin and within the feasible region. This is, for the input combination; $y = 0$, $x = 2\ 2/3$, and isoquant for $Q = 24$. Notice that $y = 1$, $x = 2$, is also feasible but this input combination produces $Q < 24$.

123. (A)

The real rate of interest is defined as the difference of the market rate of interest and the general rate of inflation. The only choice given that implies the real rate of interest would rise is (A). (B), (C) and (D) all imply that the real rate would either fall or not change.

124. (B)

Debt to equity is an indicator of how much debt a firm is carrying in relation to net worth, which is leverage. Profitability ratios are the operating margin and return on investment. Liquidity is measured by the current ratio. (D) is a measure of activity and (E) would be reflected in a liquidity measure.

125. (E)

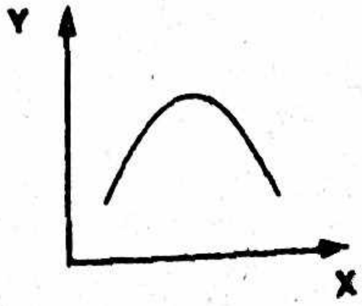
For the case where farmers exhibit a perfectly inelastic supply curve, farmers produce more (S_1) without regulation, causing prices to drop and output demanded and supplied to increase, while with a price support program, the given diagramatic analysis tells us that price will increase and output will decrease. The introduction of the farm support program causes price and quantity to move in opposite directions. Hence, without further information, specifically the elasticity of demand at the (P_1 Q_1) point, it is impossible to determine the effect on total revenue for the farmer.

126. (C)

In the long run, supply is flexible, but short term supply of farm commodities is fixed. (D) and (E) influence prices and not supply.

127. (D)

This is the formula for a quadratic equation and the graph would be:



(A) is a straight line, Y would increase exponentially in (B), (C) is a rectangular hyperbola and (E) is a logarithmic equation.

128. (A)

Cartels such as OPEC generally have monopolistic powers over supply and price, which distorts resource allocation and prices and limit supply. Recent problems with OPEC have caused low oil prices, which have created problems for American oil producers. Cartels are generally formed by industries with excess supply.

129. (B)

During wartime, the economy is working to produce more defense than in peacetime, which bids up prices. (C) is false. (D) true, but if the government were included, it would probably cause more inflation. (E) is false.

130. (B)

The price of chicken and fish would be bid up by increased demand. The price of pork would go up due to controlled supply, and the price of beef would go up because it is a substitute for pork.

131. (B)

Sales taxes are regressive because low income people must spend a larger portion of their incomes than higher income families. For this reason, in some states food and medicine are not taxed.

132. (B)

Bipolar distributions are skewed in two different directions, or have the majority of occurrences at the extremes of the distribution and not in the middle.

133. (C)

Glasnost refers to a new openness in the Soviet Union, backed by Gorbachev. Part of this program is to allow Soviets to learn from capitalism.

134. (B)

Federal revenues from taxes increased from $517 billion in 1980 to $769 billion in 1986. The budget deficit was caused by increased spending.

135. (A)

Japan had relatively high rates of domestic savings as well as financial regulations restricting the upward movement of interest rates during the mid 80's. The latter cause of the low interest rates is beginning to be removed as a barrier to high interest rates.

GRE

ECONOMICS TEST

TEST IV

GRE ECONOMICS
TEST IV

Time: 170 Minutes
135 Questions

DIRECTIONS: Choose the best answer for each question and mark the letter of your selection on the corresponding answer sheet.

1. In the short run, a purely competitive firm operating according to profit-maximum behavior will produce if

   (A) marginal revenue equals marginal cost.

   (B) price is equal to or greater than average variable cost.

   (C) price equals marginal revenue.

   (D) total revenue is equal to or greater than total cost.

   (E) total revenue is equal to or greater than total fixed cost.

2. If the price elasticity of demand for a non-Giffen good is inelastic, a decrease in its price results in

   (A) an increase in quantity demanded of other good.

   (B) a decrease in demand.

   (C) a decrease in total revenue.

   (D) an increase in total revenue.

   (E) no change in total revenue.

3. Least-squares is used to estimate the following equation, $Y_i = \propto = \beta X_i + u_i$, where Y_i is the dependent variable, X_i is the independent variable, and u_i is an error term. When $\hat{\beta}$ is statistically significant, $\hat{\beta}$

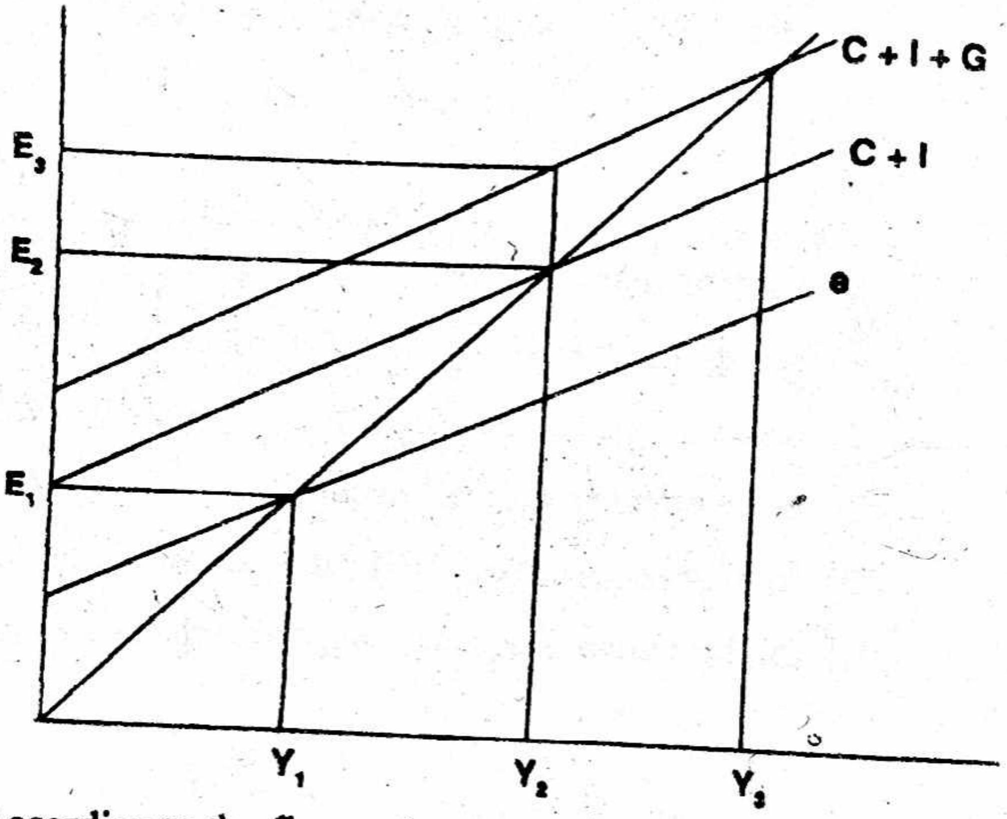
(A) is not significantly different from zero.

(B) is significantly different from zero.

(C) is an estimate of the slope of the equation.

(D) is not an estimate of the slope of the equation.

(E) indicates the average change in X for each unit change in Y.



4. According to the figure above, where Y on the horizontal axis represents income, and E on the vertical axis represents expenditures, the multiplier is the ratio of

(A) $Y_3 - Y_2 / E_3 - E_2$

(B) $E_3 - E_2 / E_2 - E_1$

(C) $Y_3 - Y_2 / Y_2 - Y_1$

(D) $Y_2 - E_2 / Y_3 - E_3$

(E) Not determinable from the graph.

5. Bank A and Bank B both are required to meet 20% legal reserve requirement. Bank A has excess reserves of $20,000. Bank B has no excess reserves but receives a deposit of $20,000. Which of the following statements is correct?

(A) Each bank can make a loan of $20,000.

(B) Bank A can make a loan of $20,000, but Bank B can make a loan of only $16,000.

(C) Bank B can make a loan of $20,000, but Bank A can make a loan of $16,000.

(D) The most each bank can loan is $16,000.

(E) Loans which banks can make are not related to the amount of reserves.

6. If the money GNP of an economy rose from $5000 to $5500 between 1985 and 1986 while the price index rose from 100 to 110 during the same period, real GNP

(A) fell by 10% from 1985 to 1986.

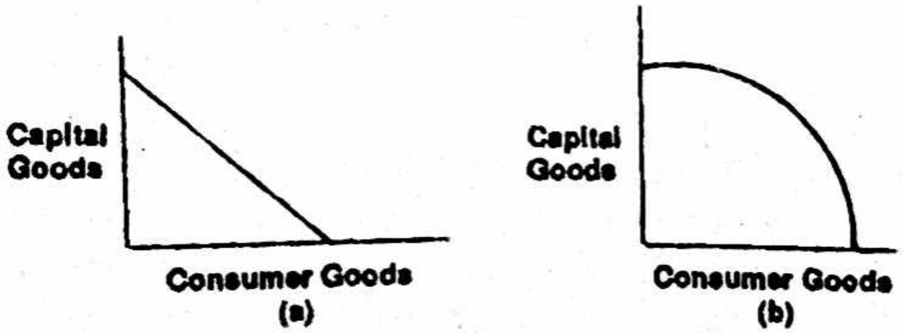
(B) rose by 10% from 1985 to 1986.

(C) remained constant from 1985 to 1986.

(D) fell by 1% from 1985 to 1986.

(E) is not obtainable from the information given.

7. Given the following production - possibilities curves



(a) (b)

(A) Graph (b) demonstrates increasing marginal opportunity costs and graph (a) demonstrates constant marginal opportunity costs.

(B) Graph (b) demonstrates decreasing marginal opportunity costs and graph (a) demonstrates constant marginal opportunity costs.

(C) Graph (b) demonstrates that to obtain additional units of consumer goods, capital goods must be decreased and graph (a) demonstrates there is no cost in terms of capital goods when additional units of consumer goods are produced.

(D) Graph (b) occurs when resources are perfect substitutes in production of capital goods and consumer goods.

(E) None of the above

8. The law of diminishing marginal returns to a factor of production is

(A) not applicable in the long run.

(B) another explanation for economies of scale.

(C) relevant in explaining additional output resulting from adding units of labor but not relevant in explaining additional output resulting from additional units of capital.

(D) not applicable in the short run.

(E) a principle which has been refuted because technological advances have made the principle no longer relevant.

9. Wage rates in producing a particular good have fallen and the good now sells for a lower price. The least complex explanation, using supply and demand curves for the good, to illustrate the fall in price would be

(A) the supply curve shifted to the right and downward.

(B) the demand curve shifted to the left because of lower wages.

(C) there was a movement down an unchanged supply curve.

(D) both the supply curve and demand curve shifted to the right.

(E) the supply curve shifted to the right relatively more than the demand curve shifted to the left.

10. Two units of labor (L) and one unit of capital (K) result in an an output of 30 units. 4 units of L and 2 units of K result in an output of 60 units. The production function demonstrates

(A) constant returns to scale.

(B) decreasing returns to scale.

(C) increasing returns to scale.

(D) increasing marginal returns.

(E) decreasing marginal returns.

11. When the nation's money supply is $1200 billion and the nominal Gross National Product is $4800 billion the velocity of money is

(A) .25

(B) 4

(C) .4

(D) $4 billion

(E) Indeterminate

12 What is the present value of a bond that will pay $2000 in two years if the discount rate is 10%, compounded annually?

(A) $1818.18

(B) $2200.00

(C) $1652.89

(D) $2420.00

(E) None of the above.

13. With an interest rate of 5%, compounded annually, the future value of $1000 two years from now is

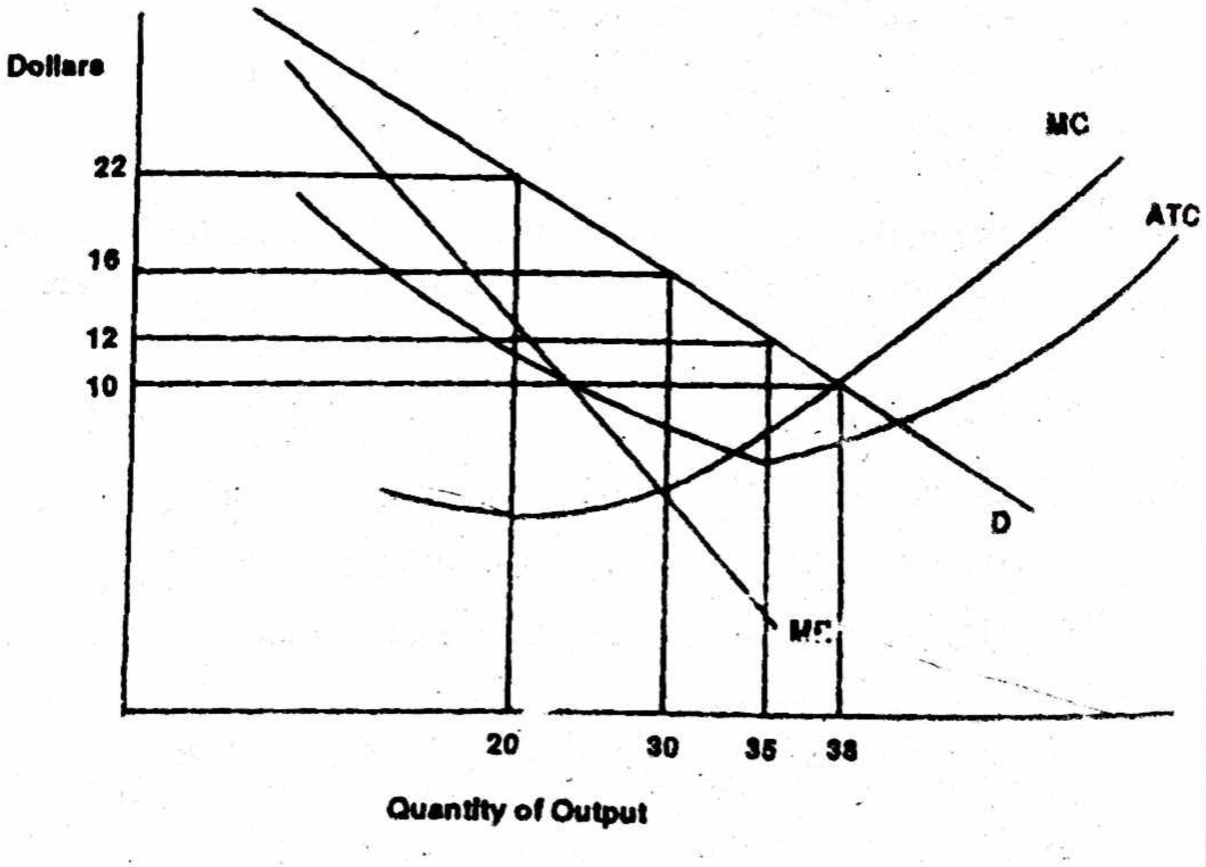
(A) $961.91

(B) $1102.50

(C) $1100.00

(D) $909.09

(E) $1000.00



14. The graph above, where D is the demand curve, MR is the marginal revenue curve, MC is the marginal cost curve, and ATC is the average total cost curve, indicates

(A) an imperfect competitor.

(B) a perfect competitor.

(C) an economic loss situation.

(D) an impossibility.

(E) none of the above.

15. The same graph shows that the firm, in order to maximize profits, should produce

(A) 30 units and charge a price of $16.

(B) 20 units and charge a price of $22.

(C) 35 units and charge a price of $12.

(D) 38 units and charge a price of $10.

(E) none of the above.

16. Appreciation of the U.S. dollar results in:

(A) U.S. tourists traveling abroad being worse off.

(B) U.S. imports increasing.

(C) foreign currency buying more U.S. goods and/or services.

(D) U.S. exports increasing.

(E) no change in foreign purchases or sales.

17. A positive proportional tax rate on income of t% is charged, although no tax has been collected previously. This tax will have which of the following effects on the multiplier?

(A) Increase the size of the multiplier.

(B) Decrease the size of the multiplier.

(C) Have no effect on the size of the multiplier.

(D) Increase the size of the multiplier during economic expansions and decrease it during economic recessions.

(E) Decrease the size of the multiplier during economic expansions and increase it during economic recessions.

18. If a purely competitive firm and a monopoly firm have the same cost data, face an upward sloping MC curve, and the industry has a downward sloping demand curve, then

(A) the competitive firm will produce a smaller output at a lower price.

(B) the competitive firm will produce a larger output at a higher price.

(C) the competitive firm will produce a larger output at a lower price.

(D) the competitive firm will produce a smaller output at a higher price.

(E) none of the above.

19. Using a Keynesian framework when the potential real GNP is $1500 billion and the actual real GNP is $1200 billion and the MPC is 2/3, what increase in government spending must occur to reach potential real GNP, when government and investment spending is autonomous with respect to income, the money market is ignored, and no tax is collected?

(A) $100 billion

(B) $300 billion

(C) $200 billion

(D) $50 billion

(E) $250 billion

20. If the marginal propensity to consume is .8 and a flat rate of 25% tax is applied to all income, an increase in income of $20 would cause consumption expenditure to increase by

(A) $16.00

(B) $12.00

(C) $12.80

(D) $1.20

(E) $60.00

21. If the FED wants to create a situation of "tight" money, which of the following actions would be taken:

(A) raise the discount rate, buy government securities, and lower the legal reserve requirement.

(B) raise the discount rate, buy government securities, and raise the legal reserve requirement.

(C) raise the discount rate, sell government securities, and raise the legal reserve requirement.

(D) lower the discount rate, buy government securities, and raise the legal reserve requirement.

(E) lower the discount rate, buy government securities, and raise the legal reserve requirement.

22. In the computation of the economy's national income, double counting and value added are related in which of the following ways?

(A) Double counting is avoided if only purchases of final goods are included in national income and the correct measure is obtained if value-added by each firm is included in national output.

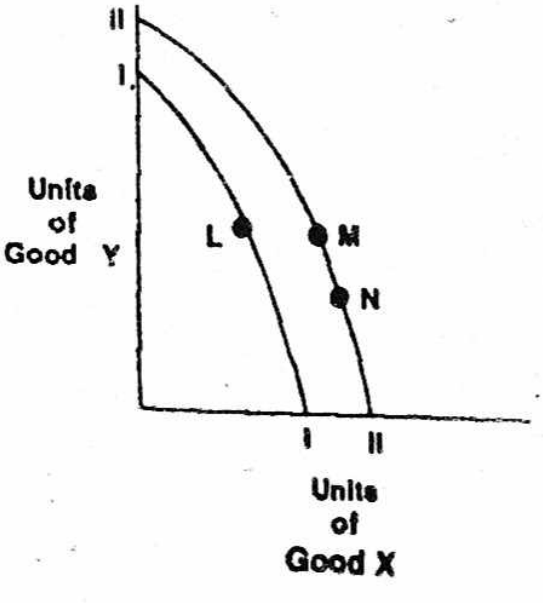
(B) Double counting refers to the problem involved in intermediate good purchases in national income and value-added refers to the addition to labor cost which occurs at each stage of production of a good.

(C) Neither double counting or the value-added approach constitute a problem in calculating national income.

(D) Both double counting and the value-added approach to calculating national income should be avoided.

(E) None of the above.

23.



In the above production-possibilities curves I and II

(A) Curve II represents a more efficient situation than Curve I.

(B) Curve II represents an economic situation in which there is more economic resources and/or improved technology than existed for Curve I.

(C) Point L represents unemployment for Curve I.

(D) Point M represents a more efficient point than Point N on Curve II.

(E) Curve I and Curve II cannot be drawn if labor and raw materials are the only resources available.

24. In a simple Keynesian world, assume the economy is operating at a full-employment, noninflationary level. Worsening world conditions necessitate additional government spending of $50 billion. What should be the direction of change in taxes and magnitude of change to maintain stable prices and full-employment equilibrium?

(A) Increase by $50 billion.

(B) Increase by more than $50 billion.

(C) Increase by less than $50 billion.

(D) Decrease by more than $50 billion.

(E) Decrease by less than $50 billion.

25. Keynes' and Say's macoeconomic theory of employment were diametrically opposed. Say states that

(A) supply creates demand.

(B) demand creates supply.

(C) unemployment is a most likely state of affairs.

(D) full employment can only be achieved by government interference.

(E) underspending is a likely consequence of an economy without a government composition.

26. The risk-free rate of interest would not be affected by

(A) changes in real output.

(B) changes in the money supply.

(C) changes in expectations concerning inflation.

(D) term to maturity.

(E) none of the above.

27. An economist's definition of investment in human capital would be represented by

(A) labor costs in producing an intermediate good.

(B) labor costs in producing a final good.

(C) federal government's expenses for unemployment compensation.

(D) the expenditure by an individual on college tuition and other college expenses.

(E) wage expenditures on an income statement.

28. The quantity supplied of ping pong paddles was 500 when the price of paddles was $2 per paddle, and the quantity supplied of paddles was 750 when the price was $1.50 per paddle. With supply and demand curves with the normal slopes, this phenomenon can be explained by observing

(A) demand has shifted to the right and supply has remained constant.

(B) supply has shifted to the right and demand has remained constant.

(C) supply has shifted to the right and demand has shifted to the left.

(D) B and C

(E) none of the above.

29. If a firm which polluted a river had to pay all social costs the result would be

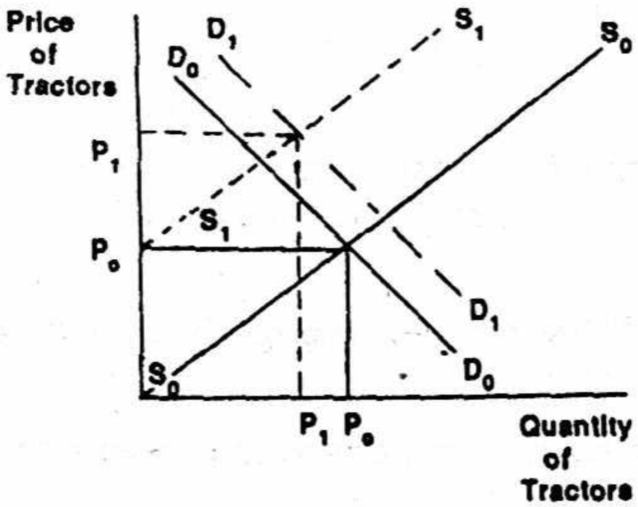
(A) a larger output.

(B) a smaller output.

(C) a marginal social cost curve which would be above the marginal private cost curve.

(D) a marginal social cost curve which would be below the marginal private cost curve.

(E) B and C



30. Given the above graph in which D_0D_0 and S_0S_0 represent the original curves and D_1D_1 and S_1S_1 represent the new curves, the new equilibrium price, P_1, could have resulted from

(A) a decrease in the cost of rubber and an increase in agricultural producers' incomes.

(B) an increase in the cost of rubber and a decrease in agricultural producers' incomes.

(C) an improvement in manufacturing of tractors and an increase in agricultural producers' incomes.

(D) a development of a substitute for tractors and an increase in agricultural producers' incomes.

(E) an increase in costs of rubber and an increase in agricultural producers' incomes.

31. Unemployment may be frictional, recessionary, or structural. Structural unemployment would be represented by

(A) a worker who no longer has the appropriate skills required in the economy.

(B) a worker who is unemployed because the economy has "cooled off".

(C) a worker who is between jobs.

(D) a worker who is unemployed because the female labor force participation rate has increased.

(E) a worker who has decided to quit seeking work.

32. In the simple Keynesian macro model, consider a graph with total spending on the vertical axis and GNP on the horizontal axis;

(A) the 45^0 line through the origin is really the aggregate supply curve.

(B) the aggregate demand curve must always pass through the origin.

(C) the slope of the aggregate demand curve is the multiplier.

(D) the multiplier is the reciprocal of the slope of the aggregate supply curve.

(E) the equilibrium income level is always the full-employment income level.

33. An asset with zero carrying costs and a present value of $50,000 will return continuous annual yield of $5000 if the current and future rate of interest is

(A) 5%

(B) 10%

(C) 12%

(D) 8%

(E) 3%

34. When inflation is 10% and life insurance companies have loaned money against cash value of the insurance policy at 6% the real rate of interest the life insurance companies would receive would be

(A) 16%

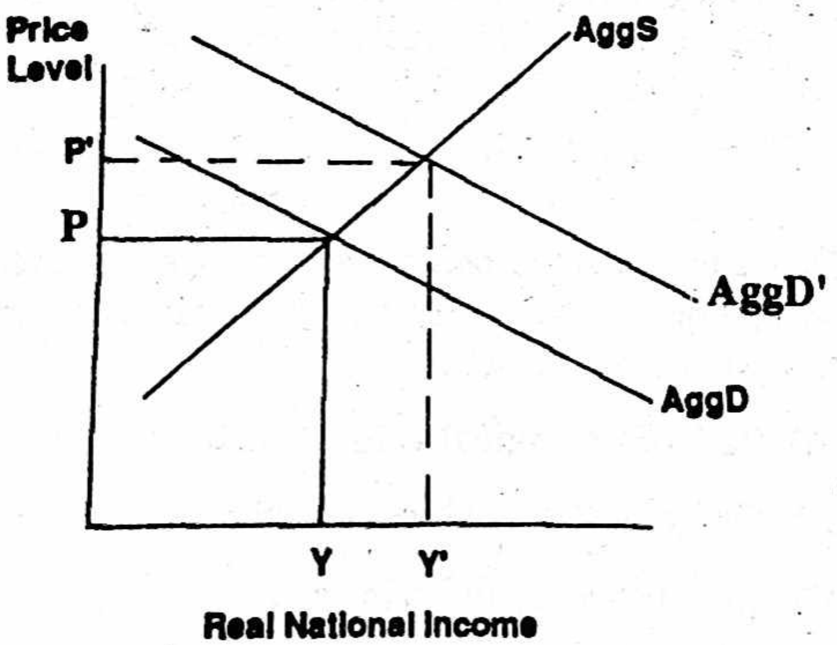
(B) -4%

(C) -10%

(D) 4%

(E) -16%

35.



From the above graph we observe

(A) an increase in aggregate demand from Agg D to Agg D' results in a higher price level.

(B) an increase in aggregate demand from Agg D to Agg D' results in more employment.

(C) a decrease in aggregate demand from Agg D' to Agg D would increase unemployment.

(D) a movement from Agg D to Agg D' is a change in aggregate demand.

(E) all of the above.

36. Monetary policy and fiscal policy may be used to regulate the economy. Fiscal policy is distinguished from monetary policy by noting that fiscal policy consists of

(A) money creation and stabilization.

(B) government spending or taxing to regulate economic activity.

(C) government spending or taxing to assure a balanced federal budget.

(D) federal regulation and control of the supply of money.

(E) federal government regulating the tax and spending activities of the state and local government.

37. Over a two-year period your income has increased 10%. At the same time the consumer price index has increased 20%. Your real purchasing power is

(A) 92% of its original value.

(B) 50% of its original value.

(C) not affected by the price change.

(D) 109% of its original value.

(E) not determinable by the information given.

38. If equilbrium national income is less than the full-employment or potential national income, the gap can be closed by

(A) raising taxes.

(B) decreasing government expenditures.

(C) raising taxes and decreasing government expenditures.

(D) increasing government expenditures.

(E) none of the above.

39. During inflation

(A) lenders lose, borrowers gain.

(B) borrowers lose, lenders gain.

(C) the real interest rate rises.

(D) borrowers and lenders both lose.

(E) unemployment increases.

40. When the British pound equals $1.60 and the French franc equals $0.40 the ability to earn infinite profit if it were not the case, implies that the exchange rate would be

(A) 1 franc = 4 pounds.

(B) 1 franc = 1 pound.

(C) 2.5 francs = 1 pound.

(D) 5 francs = 1 pound.

(E) none of the above.

41. Given a downward sloping IS curve, an increase in the marginal propensity to consume results in

(A) a larger multiplier and a flatter IS curve.

(B) a larger multiplier and no change in the slope of the IS curve.

(C) a larger multiplier and a steeper IS curve.

(D) a smaller multiplier and a steeper IS curve.

(E) a smaller MPS and a smaller multiplier.

42. Crowding-out refers to

(A) imports replacing domestic goods.

(B) government spending reducing private spending.

(C) federal government expenditures replacing state and local government expenditures.

(D) fiscal policy negative effects on monetary factors.

(E) federal government budget deficits' negative effects on balance of payment deficits.

43. A variable whose value is determined within an economic theory or model is

(A) exogenous.

(B) independent.

(C) deterministic.

(D) endogenous.

(E) none of the above.

44. The main monetary policy instruments that the FED uses are

(A) legal reserve ratio, discount rate, and sales or purchases of government securities.

(B) legal reserve ratio, discount rate, and margin requirement.

(C) legal reserve ratio, margin requirement, and sales or purchases of government securities.

(D) margin requirement, discount rate, and sales or purchases of government securities.

(E) newspaper articles, Federal Reserve bulletins, and Board Chairman statements.

45. If a consumer's income falls and prices rise,

(A) the budget line will shift to the left.

(B) the budget line will shift to the right.

(C) the budget line will not shift.

(D) a higher indifference curve is attainable.

(E) none of the above.

46. Consider an economy C=\$100 + .8(1-t)Y, where the tax rate (t) equals .25, investment spending (I) equals \$300, government spending equals \$1000, and C stands for consumption expenditure. For this economy, within a Keynesian framework and assuming that investment and government spending are exogenous, equilibrium implies that

(A) GNP would equal \$4000 and consumption would equal \$2500.

(B) GNP would equal \$4000 and disposable income would equal \$3000.

(C) GNP would equal \$3500 and consumption would equal \$2200.

(D) GNP would equal \$4000 and taxes would equal \$1000.

(E) GNP would equal \$4000 and the government's budget would be balanced.

47. The sign of the simple correlation coefficient is determined by

(A) the slope of the least-squares equation.

(B) the intercept of the least-squares equation.

(C) the appropriate economic theory.

(D) the researcher.

(E) r^2.

48. For the economy to have an unambiguous higher level of investment, given that the government is running a budget defict, the proper monetary policy and fiscal policy mix would be

(A) easy money and a government induced increase in personal income tax.

(B) easy money and a government induced decrease in personal income tax.

(C) tight money and reduced government spending.

(D) tight money and increased government spending.

(E) none of the above will affect investment.

49. If the FED wished to "tighten" money it would

(A) lower the discount rate.

(B) sell government securities.

(C) lower the legal reserve ratio.

(D) lower the tax rate.

(E) raise the tax rate.

50. From a Keynesian perspective, business investment will decline as a result of

(A) a fall in the interest rate.

(B) a decrease in business taxes.

(C) a decline in business expectations.

(D) acceleration of business depreciation.

(E) an increase in consumption expenditures.

51. The money multiplier is 4, and the money creating potential of the banking system is $40,000,000. The legal reserve ratio and the excess reserves are

(A) 40 percent and $4,000,000.

(B) 40 percent and $10,000,000.

(C) 25 percent and $2,500,000

(D) 25 percent and $10,000,000.

(E) 25 percent, but the excess reserves cannot be determined from the information provided.

52. If $r^2 = .86$ of an OLS regression of Y against X

(A) 86% of the variation in X is explained or associated with the variation in Y.

(B) 86% of the variation in Y is explained or associated with the variation in X.

(C) 86% of the variation in X is caused by the variation in Y.

(D) 86% of the variation in Y is caused by the variation in X.

(E) 14% of the variation in Y is explained by or associated with the variation in X.

53. Reducing the aggregate cost of production to increase employ ment is an example of

(A) demand side economics.

(B) supply side economics.

(C) Keynesian economics.

(D) classical economics.

(E) Marxist economics.

54. When the price level increases 25% starting from a price level equal to 100, a $1000 bond will have a real value of

(A) $800.

(B) $1250.

(C) $750.

(D) $667.

(E) $1333.

55. The multiplier which specifically refers to an equal increase in government spending and taxes, giving rise to that same equal increase in national income, is called

(A) the Keynesian multiplier.

(B) the balanced budget multiplier.

(C) the deficit multiplier.

(D) the reduced form multiplier.

(E) none of the above.

56. If the transaction cost paid by the supplier per unit of good sold increases,

(A) the supply curve for the good will shift to the left.

(B) the supply curve for the good will shift to the right.

(C) the demand curve for the good will shift to the right.

(D) the demand curve for the good will shift to the left.

(E) there will be no effect on either the supply curve or demand curve for the good.

57. When the FED initiates actions which will lead to an increase in the supply of money, IS-LM models tell us to expect that

(A) the interest rate will rise.

(B) the interest rate will decline.

(C) the price level will not change.

(D) investment will decline.

(E) government bond prices will decline.

58. A partial correlation coefficient of determination indicates

(A) that portion of the variation in the dependent variable which is attributable to variation in one independent variable, when all other independent variables are held constant.

(B) that portion of the variation in an independent variable which is attributable to variation in the dependent variable, when all other variables are held constant.

(C) the presence or absence of multicollinearity.

(D) the presence or absence of autocorrelation.

(E) that portion of the variation in the dependent variable which is attributable to variation in all independent variables except one which is held constant.

59. A decrease in the legal reserve ratio from 25% to 20% will

(A) result in tight money.

(B) be contractionary.

(C) increase excess reserves and the potential money multiplier.

(D) decrease excess reserves and the potential money multiplier.

(E) increase excess reserves and decrease the potential money multiplier.

60. Which of the following factors will cause the demand curve for labor to shift to the right?

(A) the demand for the product produced by labor declines.

(B) the prices of substitute inputs falls.

(C) the productivity of labor increases.

(D) the wage rate declines.

(E) None of the above.

61. With the normal shaped, short run aggregate supply curve, the result of a decrease in aggregate demand would be

(A) a fall in the price level and income.

(B) a fall in the price level and an increase in income.

(C) a rise in the price level and a fall in income.

(D) a rise in the price level and in income.

(E) none of the above.

62. In a simple linear regression equation the slope of the equation is 2. This value may be interpreted as

(A) for each unit change in Y, X changes on the average by 2 units.

(B) for each unit change in X, Y changes on the average by 2 units.

(C) an inverse relationship between X and Y.

(D) a direct relationship between X and Y.

(E) B and D.

63. During the 1970's a new phenomenon, stagflation, was observed in the United States economy. Stagflation occurs when

(A) both inflation and unemployment increase.

(B) both inflation and unemployment decrease.

(C) inflation increase and unemployment decrease.

(D) inflation decreases and unemployment increases.

(E) none of the above.

64. A partial regression coefficient represents the

(A) average change in the dependent variable which occurs when one independent variable is changed by one unit while all other independent variables are held constant.

(B) average change in the dependent variable which occurs when all independent variables except one are changed by one unit.

(C) part of the variation in Y associated with variation in one independent variable when all other independent variables are held constant.

(D) the part of the variation in Y associated with the variation in all independent variables except one.

(E) none of the above.

65. The basic difference between supply-side economists and demand-side economists on policy issues during a recession is

(A) supply-side economists want to encourage those actions which will move aggregate supply to the right and demand-side economists want to take appropriate actions which will shift the aggregate demand curve leftward or downward.

(B) supply-side economists want to encourage those actions which will move aggregate supply to the right and demand-side economists want to take appropriate actions which will shift the aggregate demand rightward or upward.

(C) supply-side economists want to encourage those actions which will move aggregate supply to the left and demand-side economists want to take appropriate actions which will shift the aggregate demand rightward or upward.

(D) supply side economists want to encourage those actions which will move aggregate supply to the left and demand-side economists want to take appropriate actions which will shift the aggregate demand curve leftward or downward.

(E) supply-side economists want to encourage those actions which will move aggregate demand rightward or upward and demand-side economists want to encourage those actions which will move aggregate supply to the right.

66. Given that a consumer's total utility function is equal to $24B - 2B^2$

(A) marginal utility from the fifth unit of B equals 2.

(B) the equation for marginal utility is 24 - 4B.

(C) total utility is maximized with the seventh unit of B.

(D) diminishing marginal utility occurs with the sixth unit of B.

(E) none of the above.

67. Give the regression model. $Y_i = B_1 + B_2X_{2i} + B_3X_{3i} + u_i$, a high correlation between X_2 and X_3 indicates

(A) the existence of multicollinearity.

(B) the separate effects of X_2 and X_3 cannot be obtained.

(C) the multiple correlation coefficient of determination can be interpreted.

(D) u_i, the error term, can still be independent of the explanatory variables, X_{2i} and X_{3i}.

(E) all of the above.

Question 68 refers to the charts below;

Firm A

Units of Labor	Output	Total Revenue
1	12	$24
2	22	$44
3	28	$56
4	30	$60

Firm B

Units of Labor	Output	Total Revenue
1	12	$24
2	22	$39.60
3	28	$44.80
4	30	$42.00

68. Which of the following statements is the best analysis of Firm A and Firm B?

(A) Firm A is a competitive firm in selling output and the marginal revenue product of labor is equal to the marginal physical product of labor times the output price which is 2.

(B) Firm B is imperfectly competitive firm in selling output and the marginal revenue of labor can be obtained by calculating changes in total revenue.

(C) Firm A's selling price is constant at $2 per unit.

(D) Firm B's selling price varies throughout the range of the output given.

(E) All of the above.

69. The demand curve for stoves is $D = 60 - 4P$ and the supply curve is $S = 40 + 6P$. The quantity of stoves bought and sold when the stove market is in equilibrium is

(A) 52

(B) 2

(C) 8

(D) 12

(E) 60

70. Business firms may merge in an attempt to strengthen economic position. A merger between Farmer Jones and Smith's Dairy Processing would represent

(A) a vertical merger.

(B) a horizontal merger.

(C) a competitive venture.

(D) a loss of efficiency.

(E) a mistake.

71. The relationship between price changes, money income changes, and the budget line with respect to the two good consumer choice problem, is that

(A) an increase in both product prices shifts the budget line to the left.

(B) an increase in both product prices shifts the budget line to the right.

(C) an increase in money income shifts the budget line to the right.

(D) an increase in money income shifts the budget line to the left.

(E) A and C.

72. A standard, multiple linear regression model has been used to fit time series data and there is statistically significant correlation between error terms.

(A) T tests can be used to interpret results.

(B) F tests can be used to interpret results.

(C) The variances of the regression coefficients will be minimums.

(D) Multicollinearity is a certainty.

(E) None of the above.

73. The income effect of a price change may be distinguished from a substitution effect of a price change by observing that the income effect refers to

(A) the effect of the increase of the consumers' purchasing power for good B when B's price falls.

(B) the increase in purchase of all goods when income rises.

(C) the increase of good A when the price of good B increases.

(D) the ability of a consumer to purchase greater quantities of good B at each price when the consumer receives more income.

(E) the relative price effects of two goods which leads to one good being purchased instead of the other good.

74. In a free trade world in which no restrictions exist, international trade will lead to

(A) reduced real living standards.

(B) decreased efficiency.

(C) reduced real output.

(D) increased efficiency.

(E) decreased productivity.

75. The marginal rate of substitution for two goods can be obtained from

(A) the slope of the demand curve.

(B) the slope of the indifference curve.

(C) the slope of the budget line.

(D) the ratio of first derivatives of the total utility functions.

(E) B and D.

76. A firm's total labor cost when six workers are employed is \$580. When seven workers are employed, the total labor cost is \$700. The \$120 change in total labor cost represents

(A) marginal physical product.

(B) marginal resource cost.

(C) marginal cost.

(D) marginal revenue product.

(E) marginal revenue.

77. Given: $Y = \propto + \beta X_i + u_i$

$X = Y_i + Z_i$

where u_i is an error term

(A) X is an exogenous variable in the model.

(B) Y is an exogenous variable in the model.

(C) Z is an exogenous variable in the model.

(D) The second equation represents a behavioral relationship.

(E) The first equation represents a deterministic relationship.

78. Two individuals, 1 and 2, have the following consumption functions: $C_1=5 + .8Y_1$ and $C_2=10 + .7Y_2$, where C_1,C_2 represent consumption expenditures and Y_1,Y_2 represent the

individuals incomes. If the total income ($Y_T = Y_1 + Y_2$) is divided equally, the level of income for which the two individuals combined would have total savings of zero (i.e. the break-even income for the two individuals combined) is

(A) 120

(B) 60

(C) 90

(D) 20

(E) 75

79. A production function for a firm which produces a product with two or more inputs

(A) represents a physical relationship between outputs for a specified set of inputs.

(B) indicates the least-cost combinations of inputs for a given output.

(C) relates revenues and costs.

(D) indicates the dollar cost for each level of output.

(E) none of the above.

80. For a consumer to maximize satisfaction in purchasing two goods, A and B,

(A) MU_A must equal MU_B.

(B) TU_A must equal TU_B.

(C) $\frac{TU_A}{P_A} = \frac{TU_B}{P_B}$

(D) $\frac{MU_A}{P_A} = \frac{MU_B}{P_B}$

(E) $MU_A = MU_B = O$.

81. A graph which measures real expenditures (E) on the vertical axis and real income (GNP) on the horizontal axis, would not show equilibrium GNP if desired real expenditures exceeded GNP because

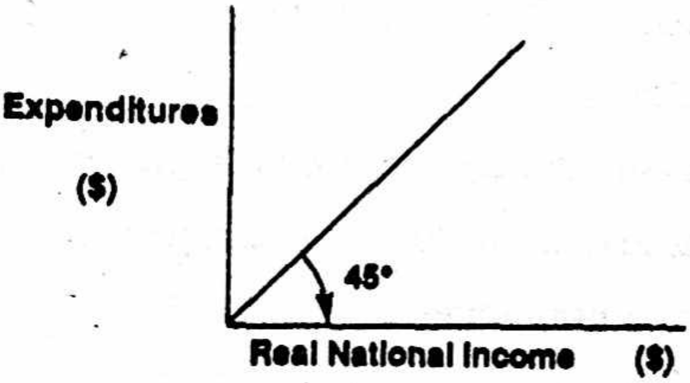
(A) savings would exceed investment.

(B) savings would be less than investment.

(C) unemployment would exist.

(D) inflation would exist.

(E) the GNP curve must shift to the right.



82. In the above graph, the 45° line represents

(A) an aggregate supply curve because the expenditures on the vertical axis represents business receipts and the real national income represents payments businesses must make.

(B) an aggregate supply curve because the expenditures on the vertical axis represents payments businesses must make and the real national income represents business receipts.

(C) an aggregate demand curve because at each point on the line expenditures equals income.

(D) an aggregate demand curve because at higher levels of national income, greater expenditures will be made.

(E) none of the above.

Questions 83 and 84 are based on the following information.

The following null hypothesis is tested. The population mean is not less than \$500, i.e., H_0 states $M_x \geq \$500$ and the alternative hypothesis is H_A: $M_x < \$500$. A five percent level of significance is chosen to test the hypothesis, and a random sample of 49 values is selected.

83. The hypothesis would be tested with

(A) a two-tailed test.

(B) a one-tailed test with the rejection region in the left tail.

(C) a one-tailed test with the rejection region on the right tail.

(D) the normal distribution.

(E) the t distribution.

84. If the sample is accepted as coming from a universe with a mean of \$500 or greater when it doesn't,

(A) a Type II error is made.

(B) a Type I error is made.

(C) the alternative hypothesis is correct.

(D) A and C are correct.

(E) B and C are correct.

85. Least-cost combination of two resources, labor (L) and capital (K), occurs for a producer who is a price-taker with respect to input prices paid when

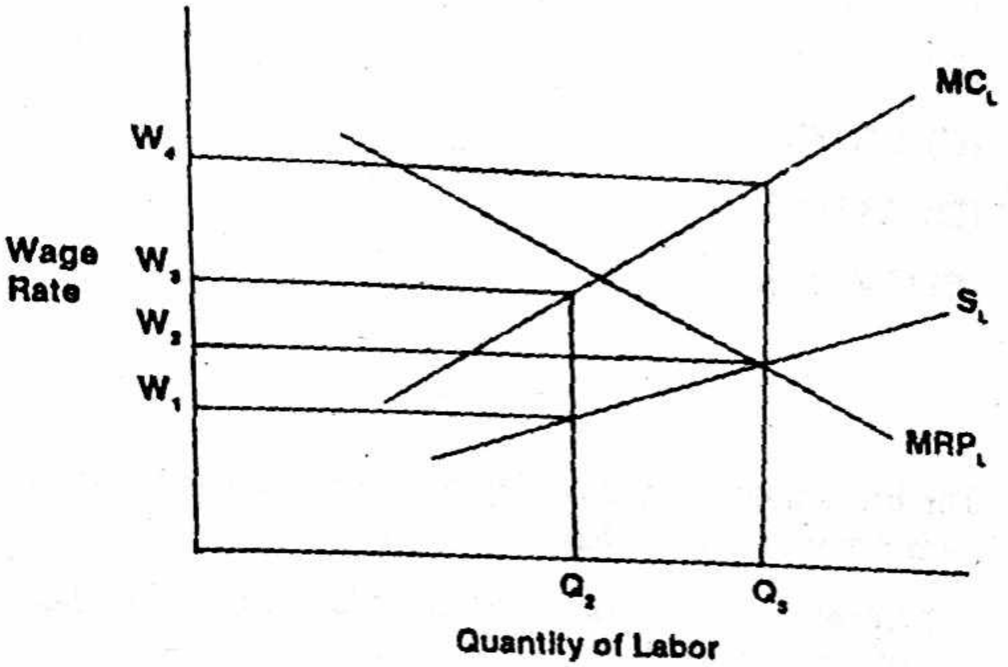
(A) the ratio of the marginal physical product of labor to the price of labor is equal to the ratio of the marginal physical product of capital to the price of capital.

(B) the price of labor times the marginal product of labor plus the price of capital times the marginal product of capital equals one.

(C) the ratio of the average product of labor to the price of labor is equal to the ratio of the average product of capital to the price of captial.

(D) the ratio of the total product of labor to the price of labor is equal to the ratio of the total product of capital to the price of capital.

(E) the price of labor equals the price of capital.



MC_L is the marginal cost of a unit of labor

S_L is the supply of labor

MRP_L is the marginal revenue product of a unit of labor

86. If the above graph represents a monopsonistic industry, the equilibrium wage and quantity of workers will be

(A) W_3 and Q_2.

(B) W_1 and Q_2.

(C) W_2 and Q_3.

(D) W_4 and Q_3.

(E) none of the above.

87. A commercial bank has a required reserve ratio of 20% and desires to hold 5% in excess reserves. The bank receives a $10,000 deposit. If it abides by the required reserve ratio and its desire to hold excess reserves, the bank can make a loan of at most

(A) $7500.

(B) $2500.

(C) $5000.

(D) $30,000.

(E) $40,000.

88. The importance of a tangency between a budget line and an indifference curve is that

(A) the marginal rate of substitution is equal to the price ratio of the two goods.

(B) the marginal utility of X equals the marginal utility of A.

(C) the marginal utility of X divided by the price of Y equals the marginal utility of Y divided by the price of X.

(D) total utility equals zero.

(E) none of the above.

89. When the supply of money increases

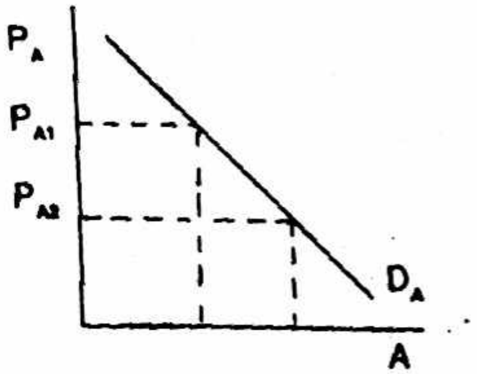
(A) the LM curve will shift in.

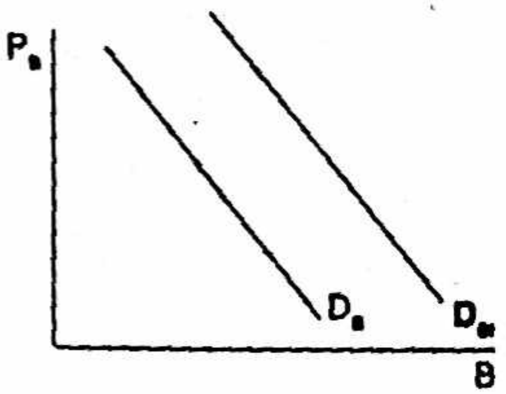
(B) the LM curve will shift out.

(C) the demand for money will decrease.

(D) the demand for money will increase.

(E) the interest rate will increase.





90. When the price of good A falls from P_{A1} to P_{A2} as shown in (1) above and the effect on good B is to shift the demand curve from D_B to D_{B1} as shown in (2) above

(A) A and B are substitutes.

(B) A and B are complements.

(C) B is an inferior good.

(D) the demand for A is elastic.

(E) both goods are inferior goods.

91. If the marginal physical product of factor A (MPP_A) is 8, the marginal physical product of B (MPP_B) is 16, the price of A (P_A) is \$4 and price of B (P_B) is \$8, and the firm has chosen its output level and the way to produce it so that the profits it receives are as large as possible, then the marginal revenue for a firm that takes input prices as given must be

(A) $2
(D) $.50
(B) $1
(E) indeterminate
(C) zero

92. In Stage II of a firm's total product curve

(A) average product is increasing.
(B) marginal product is negative.
(C) total product is decreasing.
(D) marginal product is positive.
(E) marginal product is constant.

93. Total receipts for businesses will

(A) increase when price increases and demand is elastic.
(B) increase when price increases and demand is inelastic.
(C) remain the same when price increases and demand is elastic.
(D) remain the same when price increases and demand is inelastic.
(E) decrease when price decreases and demand is elastic.

94. The accelerator principle would indicate that

(A) investment increases when the rate of growth of output increases.
(B) investment decreases when the rate of growth of output increases.
(C) investment doesn't change when the rate of growth of output changes.

(D) investment increases when the rate of growth of output decreases.

(E) none of the above.

95. If the total revenue function is $200Q - .1Q^2$,

(A) the average revenue or price equation is 200 - .1Q.

(B) the marginal revenue equation is 200 - .2Q.

(C) the demand equation is 200 - .1Q.

(D) A, B, and C.

(E) none of the above.

96. If a person's MPS is always 1/3 and the savings for this individual is exactly equal to zero when this person's disposable income is $15,000, what will consumption equal when the person's disposable income is $21,000?

(A) $17,000

(B) $19,000

(C) $24,000

(D) $21,000

(E) $18,000

97. The demand for a commodity will be more inelastic

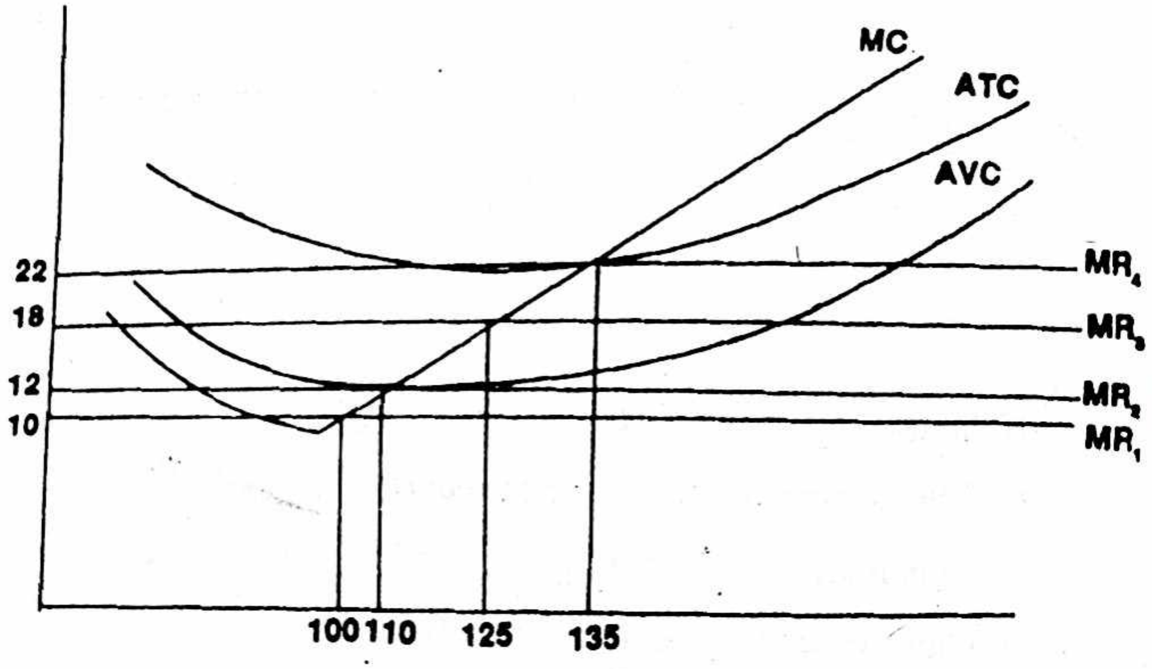
(A) the fewer the number of substitutes.

(B) the greater the time period following a price change of that commodity.

(C) the more the commodity serves as a necessity item.

(D) A and B.

(E) A and C.



Quantity of Output

MC is the marginal cost
ATC is the average total cost
AVC is average variable cost
MR is marginal revenue

98. From the above graph, we observe that

(A) the firm exhibits revenue and cost lines that are consistant for a firm operating in a purely competitive industry.

(B) a short run situation is depicted.

(C) the firm will operate over the short run if price is $12 or greater.

(D) the firm will make economic profit if the price is greater than $22.

(E) all of the above.

99. Using the same graph, the firm's short run supply curve is

(A) the upward sloping portion of the MC curve.

(B) that portion of the AVC cost which lies above its intersection with the MC curve.

(C) that portion of the ATC which is to the right of an output of 135 units.

(D) that portion of the MC cost which is to the right of its intersection with the AVC curve.

(E) none of the above.

100. A linear, downward-sloping demand curve

(A) has constant elasticity along its entire length.

(B) represents unitary elasticity.

(C) indicates a constant ratio of percentage change in quantity to percentage change in price

(D) has different elasticities along its length.

(E) represents a purely competitive firm's demand curve.

101. If a production function can be represented as an unweighted geometric mean of n inputs, then it can be written as $(A \times B \times \ldots N)^{1/N}$, where A,B,...N are each inputs relevant for the production process. For the case of a two-input production process using inputs A and B, it is true that

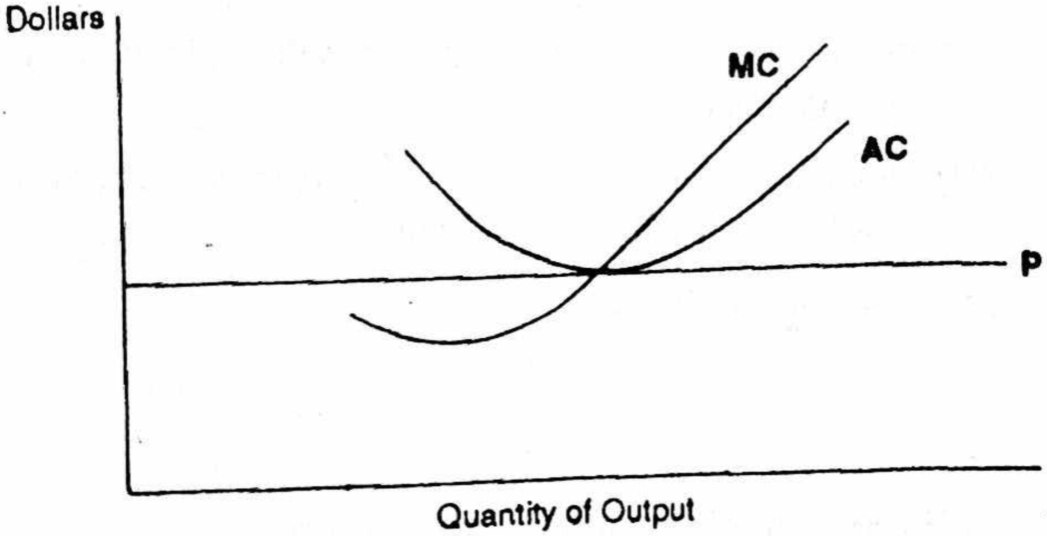
(A) 4 unit of A and 9 units of B produce 6 units of output.

(B) 9 units of A and 4 units of B produce 6 units of output.

(C) 10 units of A and 10 units of B produce 100 units of output.

(D) A and B

(E) None of the above.



102. The above graph depicts

(A) long-run equilibrium for a firm in purely competitive industry.

(B) an economic profit of zero for a firm in a purely competitive industry.

(C) a long run situation.

(D) a triple equality.

(E) all of the above.

103. The simple consumption function is C= \$200 + .9Y and I, investment, consists of an autonomous value of \$300 and since there is no government component, the equilibrium condition is Y = C + I. What is the equilibrium income?

(A) \$5000	(D) \$500
(B) \$3000	(E) \$1000
(C) \$2000	

104. If investors' expectations concerning the future are "positive" and thus increase investment at every interest rate, the

(A) IS curve would shift up.

(B) IS curve would shift down.

(C) LM curve would shift down.

(D) LM curve would shift up.

(E) IS and LM curves will not shift.

105. If nominal GNP were \$1000 billion in 1976 and \$2200 billion in 1986, and the implicit GNP deflator was 1.2 in 1976 and 1.6 in 1986 conclude that

(A) real GNP increased by approximately \$542 billion from 1976 to 1986.

(B) the price level fell from 1976 to 1986.

(C) real GNP increased by 35%.

(D) nominal GNP increased by 80%.

(E) the price level increased by 25% from 1976 to 1986.

106. When GNP is \$500 billion and consumption expenditures are \$300 billion

(A) the MPC is .6.

(B) the MPS is .4.

(C) the multiplier is 2.5.

(D) all of the above.

(E) none of the above.

107. The demand curve for labor slopes downward because

(A) the demand for labor is a derived demand.

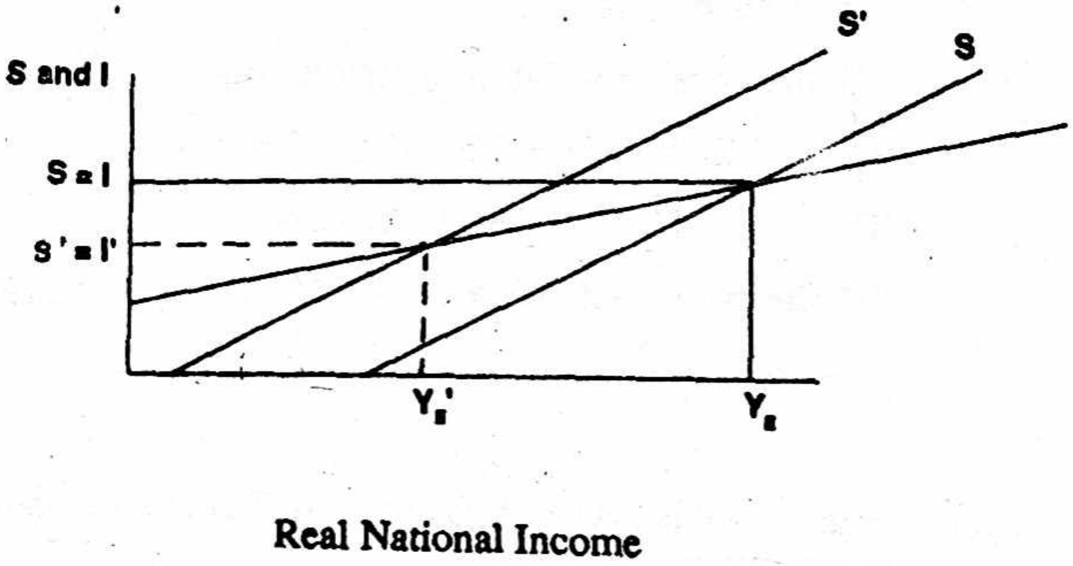
(B) greater quantities of labor will be demanded at lower price.

(C) the demand curve for products which labor produces slopes downward.

(D) the marginal physical product of labor generally decreases as more units of labor are added.

(E) all of the above.

Question 108 refers to graph below.



The above diagram represents the concept of paradox of thrift because

(A) an attempt by households to save more as shown by S moving to S' results in a lower level of income, Y'_E, and a resulting lower level of S at S' = I', where the new savings line, S', intersects the original investment line, I.

(B) an attempt by households to save more as shown by S' moving to S results in a higher level of income, Y_E, and a resulting higher level of S at S = I.

(C) autonomous investment as shown by the curve I means a change in attempted saving leads to a change in actual saving.

(D) induced investment as shown by the curve I means an increase in attempted savings leads to a higher level of income.

(E) any attempt by households to do more saving will be offset by government doing more spending.

109. Increasing the minimum wage for workers will

(A) increase employment of those workers.

(B) result in a scarcity of workers.

(C) cause a substitution of capital for labor.

(D) decrease the marginal productivity of those workers.

(E) solve an unemployment problem.

110. In a less-developed country

(A) income distribution would be more equal, but wealth distribution more unequal than the same distributions in a developed country.

(B) income distribution would be less equal, but wealth distribution more equal than the same distributions in a developed country.

(C) income distribution and wealth distribution would both be more unequal than the same distributions in a developed country.

(D) income distribution and wealth distribution would both be more equal than the same distributions in a developed country.

(E) the income distribution and wealth distribution cannot be compared with the same distributions in a developed country because there is no acceptable mechanism for comparison.

111. A combination gasoline station and car wash advertises that gasoline is $1.10 per gallon and the cost of a car wash is $3.00. A driver needs gas and wants his car washed. If a driver buys 14 gallons of gasoline, the gas costs $1.10 per gallon; but if the driver buys 15 gallons the car wash free. The marginal cost of the fifteenth gallon is

(A) $1.90
(B) -$1.90
(C) $3.00
(D) $1.10
(E) $4.10

112. The following equation $Y_i = \propto + \beta X_i + u_i$ represents

(A) an identity.
(B) a behavioral equation.
(C) a deterministic relationship.
(D) an exonometric relationship.
(E) B and D.

113. In a two country, two commodity world, if Country A has an absolute advantage in producing both goods, X and Y,

(A) Country A has comparative advantages in producing both goods.

(B) Country B does not have comparative advantage in producing either good.

(C) Country B could still have a comparative advantage in producing one of the goods.

(D) Country A will not benefit by trading with Country B.

(E) Country B will not benefit by trading with Country A.

114. Dumping on a foreign market results when a country

(A) sells a commodity in that foreign market at a lower price than prices at home.

(B) has excess production which must be marketed outside the country.

(C) sells a commodity in the foreign market below the costs of production.

(D) sells surplus agricultural production in that foreign market.

(E) places export subsidies on a product which is sold in that foreign market.

115. The Laffer curve depicts

(A) a trade off between tax rates and government receipts.

(B) price levels and real income.

(C) government deficits and unemployment.

(D) tax rates and inflation.

(E) tax rates and price levels.

116. If A is preferred to B and B is preferred to C and there is indifference between A and D,

(A) D is preferred to C.

(B) B is preferred to D.

(C) there is indifference between C and D.

(D) there is indifference between A and C.

(E) there is indifference between B and D.

117. As disposable income increases from $1500 to $2000, saving increases from minus $50 to $250. If the relationship between disposable income and saving is linear, the MPC obviously has a value of

(A) .6	(D) .8
(B) .4	(E) none of the above
(C) .2	

118. If a consumer is purchasing only two commodities, X and Y, and the marginal utility per dollar of Y is greater than the marginal utility per dollar of X, to maximize total utility with the limited income, the consumer should buy

(A) less of both commodities.

(B) more of both commodities.

(C) more of Y.

(D) more of X and less of Y.

(E) none of the above.

119. Which of the following combinations would most likely lead to an increase in the rate of inflation?

(A) Expansive fiscal policy and easy money.

(B) Expansive fiscal policy and tight money.

(C) Restrictive fiscal policy and easy money.

(D) Restrictive fiscal policy and tight money.

(E) None of the above. Fiscal policy and monetary policy do not affect the rate of inflation.

120. A consumer's consumption consists of two products, X and Y. The marginal utility of each good is independent of the amount consumed of the other good. If the price of A is $2 per unit and the price of B is $5 per unit, a consumer with an income of $35 and the marginal utilities shown below will maximize satisfaction by purchasing

Number of Units Consumed	Marginal Utility of A	Marginal Utility of B
1	20	45
2	18	42
3	14	35
4	12	30
5	10	25

(A) 2 units of A and 1 unit of B.

(B) 3 units of A and 3 units of B.

(C) 4 units of A and 4 units of B.

(D) 5 units of A and 5 units of B.

(E) 4 units of A and 5 units of B.

121. If Arica can produce 20 units of X if it devotes all of its labor resources to the production of X and 40 units of Y if it devotes

all of its labor resources to the production of Y, and Britica's figures for X and Y, under the same conditions, are 40 and 20 respectively, then, according to the Ricardian model of trade,

(A) Arica cannot afford to trade with Britica.

(B) Britica cannot afford to trade with Arica.

(C) Arica has comparative advantage in producing X.

(D) Britica has a comparative advantage in producing Y.

(E) Arica should produce Y and Britica should produce X.

122. If the price level for an economy was 100 in 1984, 115 in 1985, and 125 in 1986, the rate of inflation between 1985 and1986 was

(A) 10% (D) 8%

(B) 25% (E) 17.5%

(C) 8.7%

123. The econometric problem of errors in variables leads to

(A) biased estimates of regression coefficients.

(B) autocorrelation.

(C) unbiased estimates of regression coefficients but non-minimum variance of estimated coefficients.

(D) misspecification of regression equations.

(E) none of the above.

124. If a person's MPC is always two-thirds and that person's break-even point is $6,000, at a disposable income of $9,000 the person's consumption expenditures will be

(A) \$8,000.
(B) \$5,000.
(C) \$6,000.
(D) \$7,500.
(E) indeterminate.

125. A decrease in the marginal propensity to import will lead to

(A) an increase in GNP.
(B) lower the multiplier.
(C) an increase in imports.
(D) a decrease in imports.
(E) a decrease in GNP.

126. If consumers intend to become more thrifty, then in a graph of savings (consumption) against income,

(A) the saving curve will shift upward and the consumption curve will shift upward.
(B) the saving curve will shift downward and the consumption curve will shift upward.
(C) the saving curve will shift upward and the consumption curve will shift downward.
(D) the saving curve will shift downward and the consumption curve will shift downward.
(E) there will be no effect on the consumption curve but the saving curve will shift upward.

127. If government's tax function is $T = 80 + .6Y$ and the marginal propensity to consume is a constant .8, an increase in GNP of \$50 would cause consumption to:

(A) increase by $16.

(B) decrease by $16.

(C) increase by $40.

(D) decrease by $40.

(E) decrease by $30.

128. The foreign exchange rate is one dollar equals one and six-tenths pounds and an American car sells for $8,000; ignoring transportation costs, quotas, and tariffs, an equivalent British car will be priced at

(A) 5,000 pounds

(B) 5,000 dollars

(C) 12,800 dollars

(D) 12,800 pounds

(E) 8,000 pounds

129. Multicollinearity

(A) cannot occur if a regression model contains only one independent variable.

(B) does not affect the standard errors of regression coefficients.

(C) can only be detected by the Durbin-Watson statistic.

(D) can only occur in simultaneous equation systems.

(E) can be ignored if the researcher is only interested in separate effects of the independent variable.

130. If the Fed wanted to decrease the quantity of money held by the public it would

(A) sell government securities.

(B) buy government securities.

(C) lower the legal reserve requirement.

(D) lower the discount rate.

(E) raise taxes.

131. According to the classical theory, which of the following is likely to happen if the total spending is less than total income?

(A) Unemployment will occur.

(B) The rate of interest will fall, causing the quantity of saving to fall and the quantity of investment to increase.

(C) The rate of interest will fall, causing the quantities of saving and investment to rise.

(D) The rate of interest will fall, causing the quantity of saving to rise and the quantity of investment to fall.

(E) None of the above.

132. A depreciation of the United States dollar would be expected to

(A) increase U.S. imports.

(B) decrease U.S. imports.

(C) increase U.S. exports.

(D) increase the U.S. balance of payments difficulties.

(E) B and C.

133. The rising portion of the short-run average cost curve is

(A) equivalent to the firm's short run supply curve.

(B) attributable to the law of diminishing marginal returns.

(C) an illustration of diseconomies of scale.

(D) is nonexistent for a monopoly firm.

(E) represents a segment of the curve which depicts non levels of output.

134. "Terms of trade" between two countries refers to a ratio of

(A) export prices to import prices.

(B) currency values.

(C) exports to imports.

(D) industrial prices to agricultural prices.

(E) balance of trade to balance of payments.

135. An expansionary supply-side shock results in

(A) an increased real national income.

(B) the aggregate supply curve shifting to the left.

(C) the aggregate demand curve shifting to the right.

(D) the aggregate demand curve shifting to the left.

(E) higher prices assuming no shift in the aggregate demand curve.

GRE ECONOMICS
TEST IV

ANSWER KEY

1.	B	35.	E	69.	A	103.	A
2.	C	36.	B	70.	A	104.	A
3.	B	37.	A	71.	E	105.	A
4.	A	38.	D	72.	E	106.	E
5.	B	39.	A	73.	A	107.	E
6.	C	40.	E	74.	D	108.	A
7.	A	41.	A	75.	E	109.	C
8.	A	42.	B	76.	B	110.	C
9.	A	43.	D	77.	C	111.	B
10.	A	44.	A	78.	B	112.	E
11.	B	45.	A	79.	A	113.	C
12.	C	46.	C	80.	D	114.	A
13.	B	47.	A	81.	B	115.	A
14.	A	48.	A	82.	A	116.	A
15.	A	49.	B	83.	B	117.	B
16.	B	50.	C	84.	C	118.	C
17.	B	51.	D	85.	A	119.	A
18.	C	52.	B	86.	B	120.	D
19.	A	53.	B	87.	A	121.	E
20.	B	54.	A	88.	A	122.	C
21.	C	55.	B	89.	B	123.	A
22.	A	56.	A	90.	B	124.	A
23.	B	57.	B	91.	D	125.	A
24.	B	58.	A	92.	D	126.	C
25.	A	59.	C	93.	B	127.	A
26.	E	60.	C	94.	A	128.	D
27.	D	61.	A	95.	D	129.	A
28.	D	62.	E	96.	B	130.	A
29.	B	63.	A	97.	E	131.	B
30.	E	64.	A	98.	E	132.	E
31.	A	65.	B	99.	D	133.	B
32.	A	66.	B	100.	D	134.	A
33.	B	67.	E	101.	D	135.	A
34.	B	68.	E	102.	E		

GRE ECONOMICS
TEST IV

DETAILED EXPLANATIONS OF ANSWERS

1. (B)

A perfectly competitive firm can sell any number of units for the given price. That price times the quantity sold is total revenue. The average variable cost times the number of units is total variable costs. Therefore, (B) is equivalent to saying the total revenue is equal to, or greater than, total variable cost. (A) is actually the necessary condition which must be satisfied if a perfectly competitive firm is to operate as a profit maximizing firm in the short run. (C) is always true in perfect competition, however, this does not establish any condition concerning the production or non-production of the firm in the short run. Both (D) and (E) are incorrect statements.

2. (C)

When the price elasticity of demand for a good is inelastic consumers are not very responsive to price change. That is, a change in price does not result in much change in quantity demanded. Therefore, if there is a decrease in price consumers are not very responsive to that price change. They do not increase quantity demanded all that much. With the lower price multiplied by a relatively small increased quantity the total revenue falls. (A) is true only if the other goods are complements, and that information is not given. (B) is incorrect since a fall in price results in a increase in quantity demanded, not an increase in demand. A fall in price results in a move along the curve, not a movement of the curve. (D) holds true only if the price elasticity of demand is elastic. (E) only when the price elasticity of demand is unitary.

3. (B)

In testing the significance of $\hat{\beta}$ the null hypothesis is usually stated as $\hat{\beta}$ is equal to zero. β is the parameter and $\hat{\beta}$ is a statistic. If $\hat{\beta}$ is too far from β to be attributed to chance, $\hat{\beta}$ is said to be significant and the null hypothesis that $\hat{\beta}$ equal to zero is rejected. (A) and (D) are thus obviously incorrect. (C) is true but not relevant to the question. (E) is incorrect because if $\hat{\beta}$ is statistically significant, and there are no econometric problems, $\hat{\beta}$ indicates the average change in Y for each unit change in X, not vice versa.

4. (A)

There are several formulas for the simple Keynesian multiplier. For this question the important concept is that the multiplier is equal to the change in income (ΔY) divided by the change in aggregate demand (ΔE). (Y_3-Y_2) is the change in income and (E_3-E_2) is the change in aggregate demand. (B) represents a ratio of changes in expenditures only and (C) represents a ratio of changes in income only. (D) represents a ratio of savings and (E) is incorrect because (A) exists.

5. (B)

A single commercial bank can make loans to the extent of its excess reserves. Therefore, Bank A can make loans of \$20,000. Bank B, however, must hold 20% of the \$20,000 deposit as federal reserve deposit. Therefore, Bank B can only make \$16,000 of loans. The loans that banks make depend upon meeting the legal reserve requirements.

6. (C)

Money GNP increased 10% (500/5000*100%). The price index also rose 10%. The result is that the real GNP was constant. It neither fell (A) and (C) nor rose (B). The change in real GNP was obtainable (E).

7. (A)

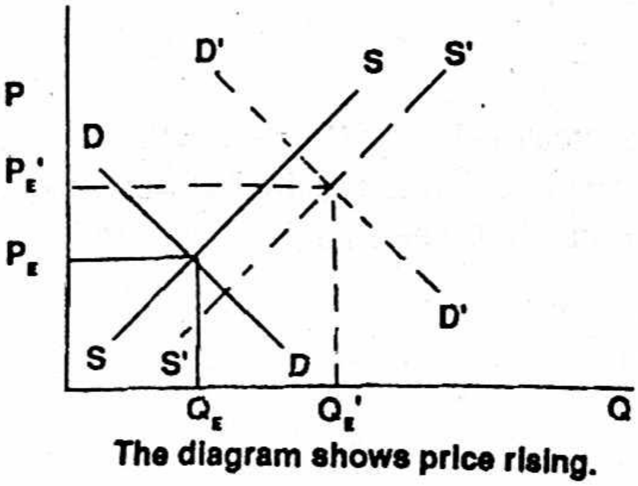
In graph (b), additional units of consumer goods are increasingly costly in terms of capital goods. In graph (a), the cost of additional units of consumer goods in terms of capital goods is constant. (B) is incorrect because (b) demonstrates increasing marginal opportunity cost. For (C), (a) does show a constant cost of one good in terms of the other good. Graph (a) would occur if resources were perfect substitution (D).

8. (A)

The law of diminishing marginal returns is a short run concept because the law contains the conditions that one factor of production is variable and all other factors are fixed. In the long run all factors are variable. (B) is incorrect because economies of scale is a long run concept in which all factors are variable. (C) is incorrect because any factor can be the fixed factor or variable factor. (D) has been explained, and (E) incorrect since the law does still exist and technological advances are, in fact, probably long run effects.

9. (A)

Lower costs of production (wages) cause the supply curve to shift to the right. The change in wage rates does not affect the demand (B). (C) is not correct. There would be a changed supply curve. There is no basis for expecting the demand curve to shift to the right, and (D) doesn't mean a lower price if D shifted relatively more than S.



The diagram shows price rising.

(E) is more complex than (A) and with the given information there is no reason to believe D would shift.

10. (A)

The inputs are doubled and output doubled. This illustrates constant returns to scale. Decreasing returns to scale could be shown by input doubling but output increasing less than double (B). Increasing returns to scale could be shown by input doubling and output more than doubling (C). (D) and (E) are inappropriate because they contain the word marginal, implying a fixed factor of production, and all inputs were changed.

11. (B)

To determine the average number of times per year that the money stock is used in making payments for final goods and services, i.e. the velocity of money (V), we solve for V in the equation MV=GNP. M is the money supply ($1200 billion). If GNP=$4800 billion, then the equation is ($1200 billion) V = ($4800 billion), V=4.

12. (C)

The formula for present value is $P_n = P_o (1+r)^n$ where P_o is the orginal invested principal, P_n is the later value of that principal, and r is the interest rate or discount rate. Substituting, $\$2000 = P_o(1+.10)^2$. Solving the equation, the answer obtained is 1652.89. (B) and (D) are obviously incorrect because we could not expect anyone to pay more today than they would receive two years later. (A) represents the $2000 discounted for only one year.

13. (B)

The interest rate formula is $P_n = P_o (1+r)^n$, where P is the present amount (principal), r = interest rate, and n = number of years. For this problem, $P_n = \$1000 (1+.05)^2 = \$1102.50$. A, D, and E could not possibly be correct because at any positive interest rate the future value would have to be the greater than $1000.

14. (A)

The downward sloping demand curve indicates the firm is an imperfect competitor. The firm makes a profit because at MC=MR the AR curve is above the ATC curve (C).

15. (A)

The firm will produce that level of output where MR=MC and charge that price which is found by moving up to the demand curve vertically from that intersection.

16. (B)

Appreciation of the U.S. dollar means the dollar's exchange rate has increased. The dollar will have increased in terms of its international value. The dollar will buy more imports. Since the dollar will buy more foreign goods. U.S. tourists are not worse off (A). (C) has been explained above. U.S. exports will be more costly to foreigners and exports will decrease (D).

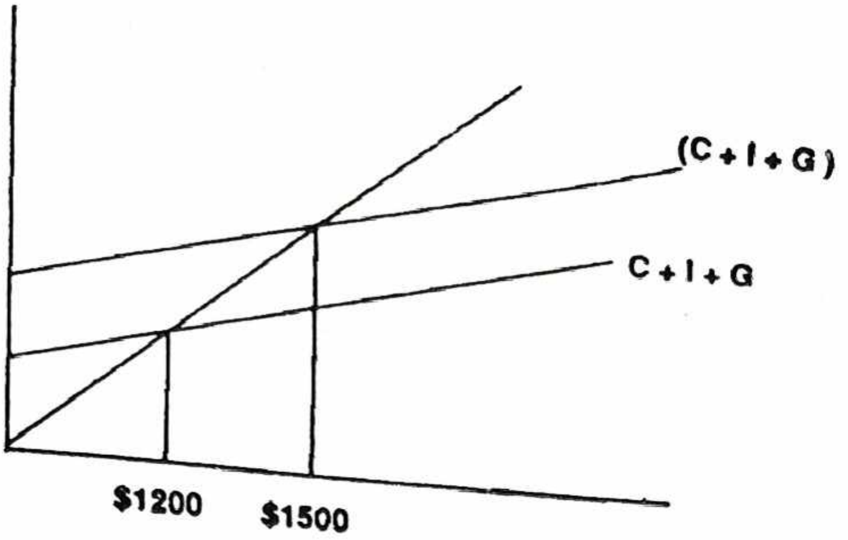
17. (B)

The automatic tendency for taxes to take away a fraction of each extra dollar of GNP means the size of the multiplier is reduced. (A) and (C) are thus obviously wrong. The state of the economy does not affect the automatic stabilizers affect on the size of the multiplier (D and E) under a proportional tax structure.

18. (C)

Because a monopoly's demand curve lies above its MR curve, a monopoly firm which will equate MC and MR will charge a higher price and produce a smaller output than a purely competitive firm which will also equate MC with MR, but MR is the competitive firm's demand curve.

19. (A)



Using the above graph and a formula for the Keynesian multiplier, $\Delta Y = k(\Delta$ Autonomous Demand), where k is the multiplier. And, k can be obtained since the MPC is given, 2/3.

k = 1/(1–MPC) = 1/(1–2/3) = 3. ΔY, from the problem is $1500 – $1200 = $300. Therefore, $\Delta Y = k(\Delta$ Autonomous Demand) = $300 = $3 ($\Delta$ Autonomous Demand).

Δ Autonomous Demand = $300/3 = $100.

20. (B)

The flat rate of 25% reduces the original income of $20 to a disposable income of $15. With an MPC of .8, 80% of that income, $12, will be spent. (A) ignores the subtraction of taxes. (C), (D) and (E) have no basis as choices.

21. (C)

Raising the discount rate raises the cost of commercial banks borrowing from the FED. Selling government securities to commercial banks or the public takes money or potential money out of circulation. (Money becomes near money). Raising the legal reserve requirement wipes out excess reserves and lowers the value of the money multiplier. All three of the actions described in (C) are consistent in creating a "tight" money situation.

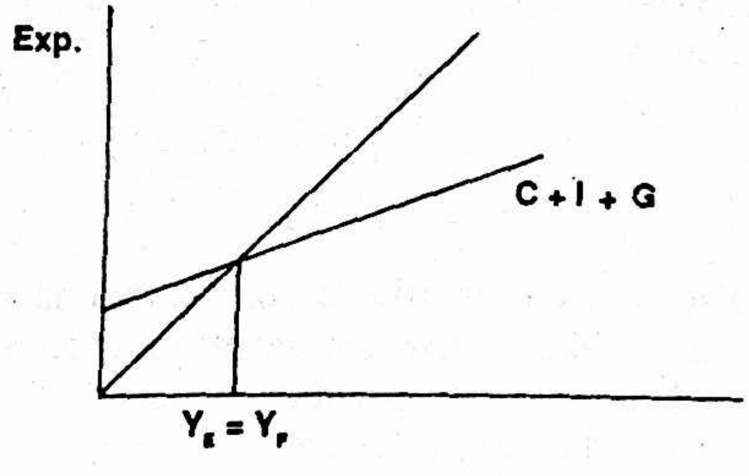
22. (A)

Double counting results when the value of intermediate goods and final goods are added. Only final goods value should be added. If we did not add value added by a particular firm, but instead added value of the product for each firm we would also be double counting. (B) is incorrect because value added includes other costs in addition to labor. (C) is wrong in both counts. For (D) we do not want to avoid using value-added.

23. (B)

A production-possibilities curve is drawn based on a given quantity of resources and given (constant) technology. For a curve to shift to the right implies either an increase in resources or an improvement in technology or both. Producing efficiently implies that more can be produced only if less of the other good is produced, *ceteris paribus*. Therefore, a comparison across curve I and curve II in terms of efficiency cannot be made (A). Point L is on a production possbility curve; therefore it is a point of full employment (C). Comparisons of production efficiency cannot be made along the same curve (D). Choice (E) is nonsense.

24. (B)



The starting point is represented by the graph. If G increases by $50 billion without lessening aggregate demand by some amount, the economy will no longer be operating at a full-employment, noninflationary level. Taxes will have to be increased to offset the government expenditure increase. But, taxes will have to be increased by more than $50 billion because $50 billion of consumer spending must be withdrawn from the economy. Removing $50 billion of consumer spending will necessitate a government increase in taxes by more than $50 billion since consumers do two things with their income, spend and save. This can be seen by looking at the Keynesian tax multiplier =

$$\frac{-mpc(tax)}{1 - mpc}$$

25. (A)

Say's law simply stated is that supply creates demand. The act of production gave producers the wherewithal to purchase goods and thus full employment would likely occur. Thus, (E) and (C) are inconsistent with Say's law and (B), which was Keynes' view, is obviously incorrect. (D) is totally inconsistent with the classical economists' view that there was no need for government.

26. (E)

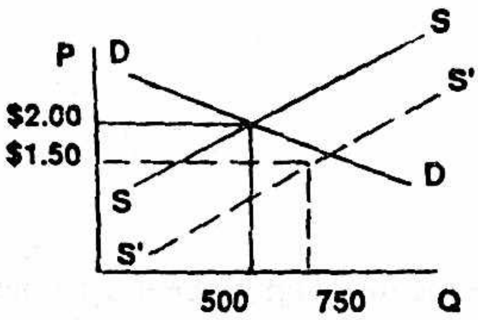
Two assets that differ only in their term to maturity, and guarantee their rate of return, i.e., are risk free, can still be expected to have different rates of return. This is true because for an individual to give up a degree of liquidity for a longer period of time requires a different return, which when all else is equal, has nothing to do with the degree of risk. Changes in expectations (C), real output (A), and the money supply (B) would affect the risk-free rate of interest.

27. (D)

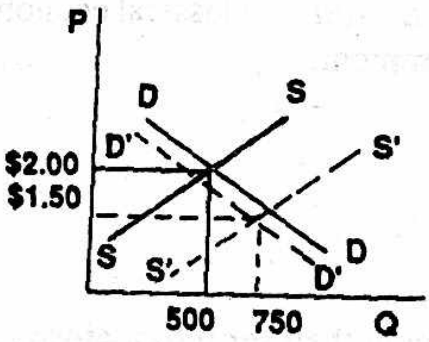
When an economist speaks of human capital, the emphasis is on capital theory which includes investment as a large component. Investment is performed to obtain a return. Investment in human capital consists of those expenditures which an individual makes to improve earning power. The concept is very specific and all other answers are not appropriate.

28. (D)

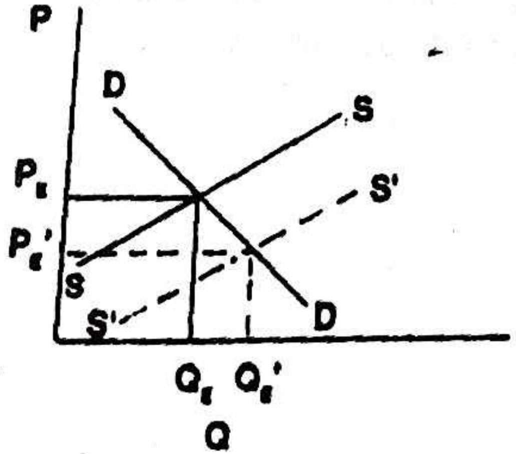
For (B) the graph below shows the result.

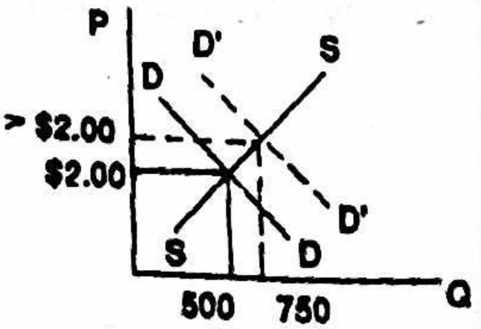


For (C) the graph below shows the result.

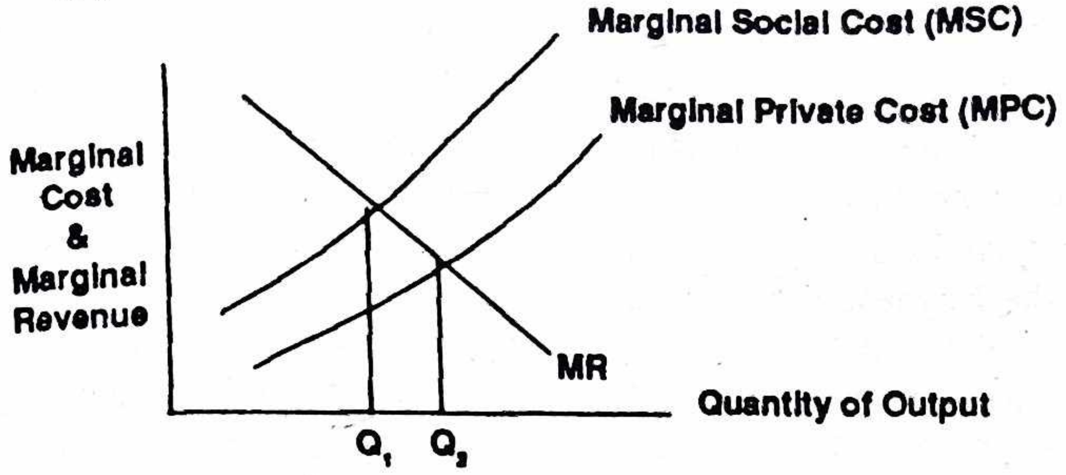


Therefore (D) is the correct answer. In (A) if demand shifted to the right and supply remained constant, there would have to be a greater quantity supplied and a higher price which is not what is described. See graph below.





29. (B)



Marginal social cost consists of two parts, the marginal private cost incurred by the firm and the incidental costs which others bear. Pollution represents a negative externality. If the firm was charged for the pollution generated, the environmental damage would become part of its private costs. The MPC curve would be shifted up by the charge and become equal to the MSC curve.

30. (E)

The correct answer has to describe a factor which would shift S to the left and shift D to the right. An increase in the cost of rubber would shift S to the left and an increase in agricultural producers' incomes would increase demand. In (A), a decrease in the cost of rubber would shift S to the right. For (B), a decrease in agricultural producers' incomes would shift D to the right. For (C), an improvement in the manufacturing of tractors would shift S to the right. For (D), a development of a substitute for tractors would shift D to the left.

31. (A)

Structural unemployment is that unemployment which results from a change in the structure in the economy. That is, a person may become unemployed because that person does not have the technical skills for an economy that no longer needs unskilled labor.

32. (A)

Any point on the 45° line represents that point where the producers are paying out in expenses (incomes to the recipients) an amount just equal to their receipts (expenditures by consumers, businesses and government). Therefore, the producers are willing and able to provide the quantities supplied represented by the 45° line. (B) is not required in the Keynesian model. In (C), the slope of the aggregate demand curve is the MPC. For (D), the reciprocal would be 1/MPC and this is not the multiplier. (E) is definitely not correct and the high probability of a difference between equilibrium and full-employment incomes is one of the primary reasons Keynes wrote his book.

33. (B)

An initial principal of $50,000 will return $5000 annually if the rate of interest is 10% [$50,000 (r) = $5000], r = 10%.

34. (B)

When the interest rate is equal to the rate of inflation, the real rate of interest is zero. When inflation is 10% and funds are loaned at 6%, the real interest rate that the companies would receive is 6%– 10% = –4%. (A) is incorrect because the real rate is not a sum of the interest rate and the inflation rate. (C) would only be correct if the funds were loaned out at 0% interest rate. (D) would have been correct if the rate of interest had been 10% and the inflation rate 6%.

35. (E)

For (A) $p' > p$; (B) $y' > y$; (C) $y < y'$. For (D) a shift of the curve is a change in demand.

36. (B)

Fiscal means government spending or taxation and refers to the Federal level. Policy refers to objectives such as stable prices and/or full unemployment.

37. (A)

Since income has increased by 10%, income would be 110% of its value two years before. Prices have increased 20% which means the price index would be 120%. The ratio of 110% to 120% provides the real purchasing power, relative to what it was at the beginning of the two year period. This value is 92%. For (B) the price increase was twice that of the income increase but the questions asks the relationship relative to the original value (base). Price affects real purchasing power (C). With prices increasing faster than income, (D) cannot be correct.

38. (D)

Increasing government expenditures represent an increase in aggregate demand and the increase is subject to a multiplier effect. Raising taxes (A), decreasing government expenditures (B), and doing both (C) and (D) worsen the recession.

39. (A)

When inflation exists, the purchasing power of money declines. Borrowers will be paying back loans with dollars that have less purchasing power. (B) and (D) are contrary to this statement. (C) is not correct because during inflation the real rate of interest, which is the nominal rate divided by the price index,.declines. Unemployment can go either way during inflation, depending on the source of inflation (E).

40. (E)

The exchange rate would be \$1.60/\$0.40 which equals 4 francs for 1 pound.

41. (A)

When the MPC increases, the MPS has to decrease. A decrease in the MPS means an increase in the multiplier (multiplier equals 1/MPS). Because of the multiplier increase, the level of spending is more sensitive to a change in the interest rate. This makes the IS curve flatter. Thus A is the only consistant answer.

42. (B)

When the Federal Government has large expenditures and especially large deficits, many economists suggest that private investment must compete with government for limited funds. (A) refers to import substitution and (C), (D), and (E) have no relevance or specific terminology.

43. (D)

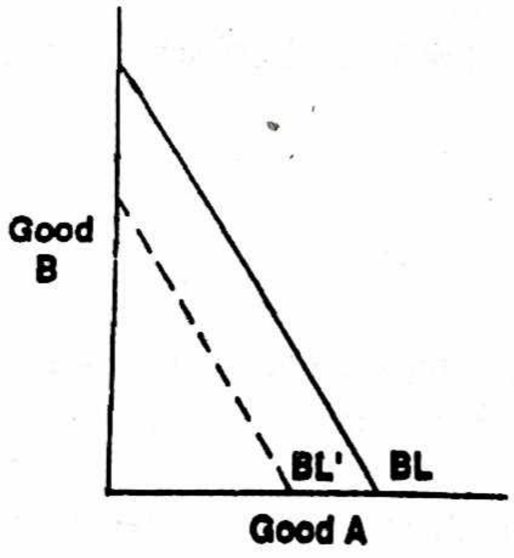
Another term which has essentially the same meaning as endogenous is dependent. Exogenous (A) and independent (B) variables represent variables whose values are predetermined. (C) refers to the nature of the equation rather than a variable.

44. (A)

This question asks for a definition and (A) contains the correct definition or list.

45. (A)

The original budget line, BL, is drawn by using given prices and income. An income fall will shift the line to the left as shown as BL'. Prices rising will also result in a shift of the line to the left as shown by BL'. (B) and (C) are not consistent with the explanation given. If the budget line shifts to the left a higher indifference curve is not attainable (D).



46. (C)

For the economy to be in equilibrium, $C + I + G = Y$.

$$\$100 + .8(1-.25)Y + \$300 + \$1000 = Y.$$
$$\$100 + .6Y + \$300 + \$1000 = Y.$$
$$\$1400 = .4Y,$$
$$\$3500 = Y.$$
$$\begin{aligned} C &= \$100 + .8(1-t)Y \\ &= \$100 + .8(.75)Y \\ &= \$100 + .6(3500) \\ &= \$2200 \end{aligned}$$

47. (A)

When one takes the square root of r^2, the value can be either plus or minus. The sign given to r is determined by the slope (ß) of the least-squares equation. The intercept refers to the point on the Y axis (B). The sign of the r depends upon the sample data not economic theory, although theory may give us information of what to expect for the sign of r. (C). Signs are not determined arbitrarily (D).

48. (A)

Easy money would result in a larger supply of money and therefore lower interest rates. An increase in personal income tax will decrease the need for the government to borrow, again lowering the interest rates. Since investment is a function of the interest rate, investment will increase.

49. (B)

When the FED sells government securities commercial banks and/or the public is exchanging money for the securities. If the FED lowered the discount rate (A) member banks would likely borrow more from the Federal Reserve banks leading to monetary expansion. If the FED lowered the legal reserve ratio (C) commercial banks would have to hold less reserves and the money multiplier would be increased. (D) and (C) are inappropriate because the FED does not control tax rates.

50. (C)

A decline in business expectations could be interpreted as a decline in expected business profits. A fall in the interest rates (A), a decrease in business taxes (B), acceleration of business depreciation (D) and increases in consumption expenditures could all be expected to lead to an increase in investment.

51. (D)

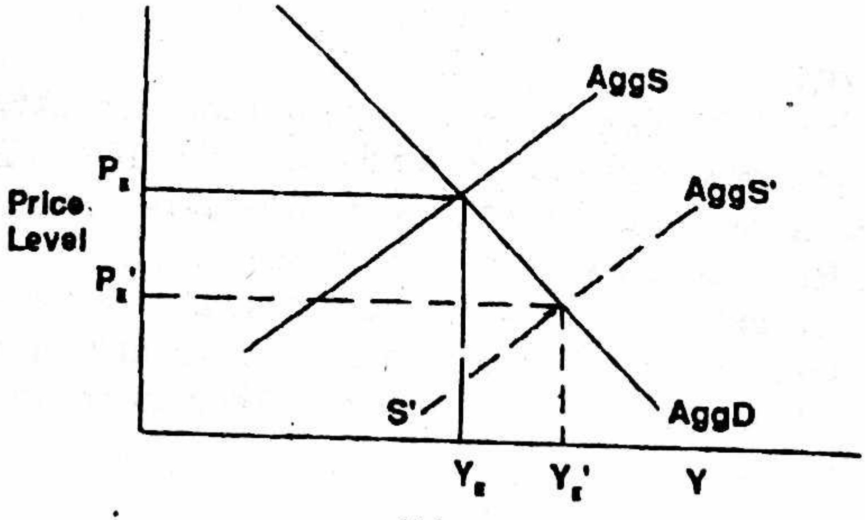
The money multiplier is 1/(legal reserve ratio), $4 = 1/x$; $4x = 1$; therefore the legal reserve ratio is 25%. The banking system can create money to the extent of its excess reserves times the money multiplier. Four times the excess reserves ($10,000,000) equals the money creating potential of the banking system ($40,000,000).

52. (B)

r^2 measures that part of the variation in the dependent variable (Y) which is associated with the variation in the independent variable (A) has the statement reversed. (C) and (D) are incorrect because correlation says nothing about casuality.

53. (B)

Supply side economics places emphasis on changing those factors which will cause the aggregate supply curve to shift to the right. Assuming no change in aggregate demand, a shift of the aggregate supply curve to the right (depicted by S^1S^1; on the graph) will reduce prices and increase employment and income.



Demand side economics emphasize shifts in the aggregate demand curve (A) and Keynesian economics (C) is essentially the same concept. Classical economics and Marxist economics do not emphasize supply side or demand side.

54. (A)

An increase in the price level by 25% would result in a new price level of 125%. The $1000 bond value must be divided by 125% (1.25) to obtain the real value $800.

55. (B)

If expenditures and taxes are raised by the same amount government's expenses and receipts will be equal, i.e. they will be balanced. The question provides a specific definition, and asks that a specific type of multiplier be selected. (A), (C) and (D) all refer to a multiplier but none are specific enough to match the description given in the question.

56. (A)

A supply curve is drawn on the basis that all variables, except price and quantity, are held constant. Any other variable which affects supply will cause the curve to shift. A variable which raises costs will cause the curve to shift to the left. Increasing transactions costs will shift the curve to the left. (C) and (D) are incorrect because changes in transactions costs, paid for by the supplier, will not cause the demand curve to shift. (E) is incorrect because changes in transactions costs will cause the supply curve to shift when they are paid for by the supplier.

57. (B)

When the supply of a commodity increases, with no change in demand, the price of that commodity falls. The same analysis is appropriate for money considering the interest rate is the price of the money. (A) has the interest rate changing in the wrong direction. Changing the money supply changes the price level (C). Increasing the supply of money increases investment (D). When the interest rate declines the price of government bonds increases.

58. (A)

(A) represents a correction definition of the concept. (B) is incorrect because it specifies measuring variation in the independent variable. Multicollinearity is detected by observing correlation coefficients (C). Autocorrelation is detected by using the Durbin-Watson statistic. (E) is an incorrect definition.

59. (C)

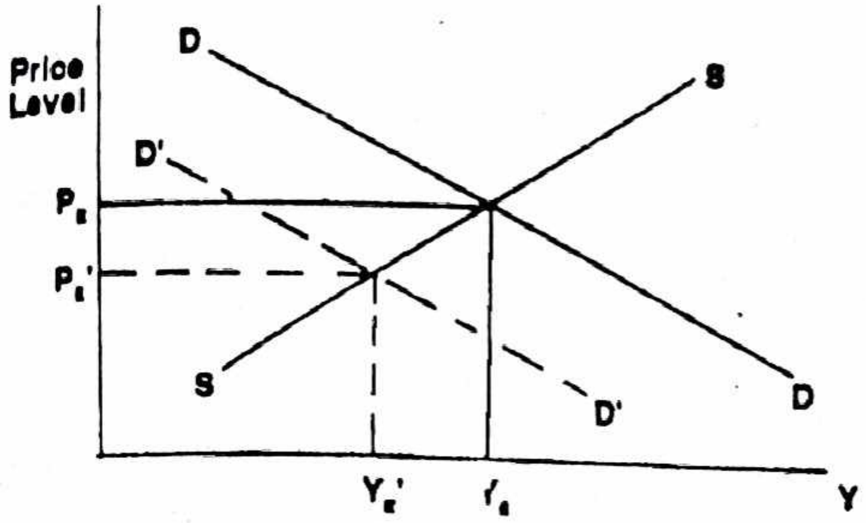
Decreasing the legal reserve ratio means banks will have to hold a smaller amount of required reserves for a given amount of demand deposits. The potential money multiplier is the reciprocal of the legal reserve ratio. Reducing the legal reserve ratio increases the reciprocal. (A) and (B) would result from increasing the legal reserve ratio. For (D), see the explanation for (C) being the correct answer. (E) is incorrect because the potential money multiplier would not be decreased.

60. (C)

One of the determinants of the location of the demand curve for an input is the productivity of the input. Increased productivity increases demand. Labor represents a derived demand. If the product which the labor produces has a decline in demand the demand for labor will fall, not rise as stated in the question (A). A fall in the price of substitute inputs will result in the demand curve for labor shifting to the left (B). Wage rate changes represents a movement along the curve (D).

61. (A)

The diagram shows a decrease in aggregate demand DD to DD^1. Clearly there is a fall in the price level and income.



62. (E)

The slope of a linear equation is $\Delta Y/\Delta X$ which is given as 2 in the equation (B), and a direct relationship between the dependent variable and the independent variable (D). (A) is not correct because of the formula for slope. Since the slope is given as 2, (C) which would necessitate a negative value is not correct.

63. (A)

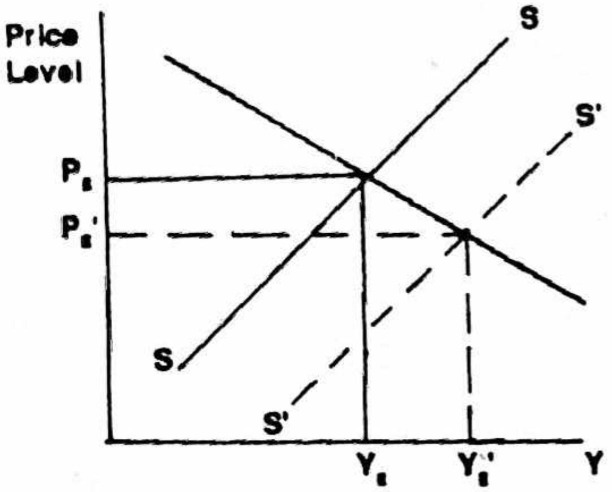
Stagflation is derived from the word *stagnant*, which would be a non-growing or declining economy, and *inflation* which means increasing price level. All other answers contain wrong combinations.

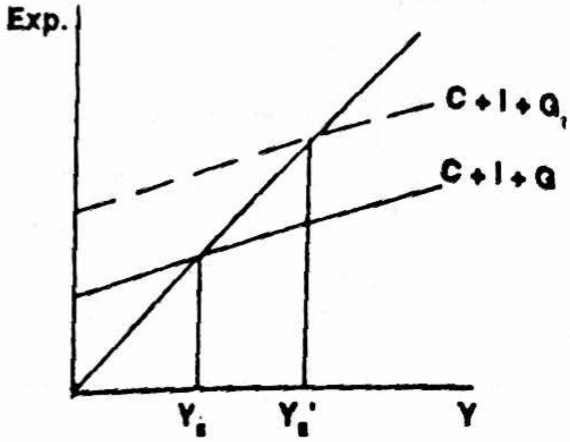
64. (A)

The definition of a partial regression coefficient is given in (A). (C) and (D) are obviously incorrect because they describe variation in the dependent variable instead of a change in the dependent variable.

65. (B)

During a recession, both schools of thought want to expand income. Supply-side economists would accomplish the objective as shown in diagram a and demand-side would accomplish the objective as shown in diagram b. All other answers contain one or more inappropriate shifts.





66. (B)

The equation for marginal utility is simply the first derivative of the total utility function. Marginal utility for the fifth unit of B equals 6, $[24(5) - 2(5)^2] - [24(4) - 2(4)^2]$ (A). Total utility is maximized where MU equals zero. Since $MU = 24 - 4B$, MU is maximized with the sixth unit, $24 = 4(6) = O$ (C). DMU occurs with the second unit of B. For one unit, $MU = 24 - 4(1) = 20$, and for two units, $MU = 24 - 4(2) = 16$ (D).

67. (E)

Multicollinearity is defined as a high correlation between or among independent variables (A). The consequence of multicollinearity is that the separate effects of the independent variables cannot be measured (B). (C) is correct as stated and u_i can still be independent of the explanatory variables (D).

68. (E)

(A) Firm A is able to sell any number of units at a constant price of \$2. The following represent the marginal physical products (MPP):

Units	MPP		MRP
1	12	which multiplies	\$24
2	10	times \$2 gives	\$20
3	6		\$12
4	2		\$ 4

Marginal Reserve Product can also be obtained from differences in the total revenue column.

Units	MRP
1	\$24 – \$0 = \$24
2	\$44 – \$24 = \$20
3	\$56 – \$44 = \$12
4	\$60 – 56 = \$4

(B) To sell more units, B has to decrease the price and MRP can be obtained by obtaining changes in total revenue. (C) is true as shown above. (D) is true as explained above.

69. (A)

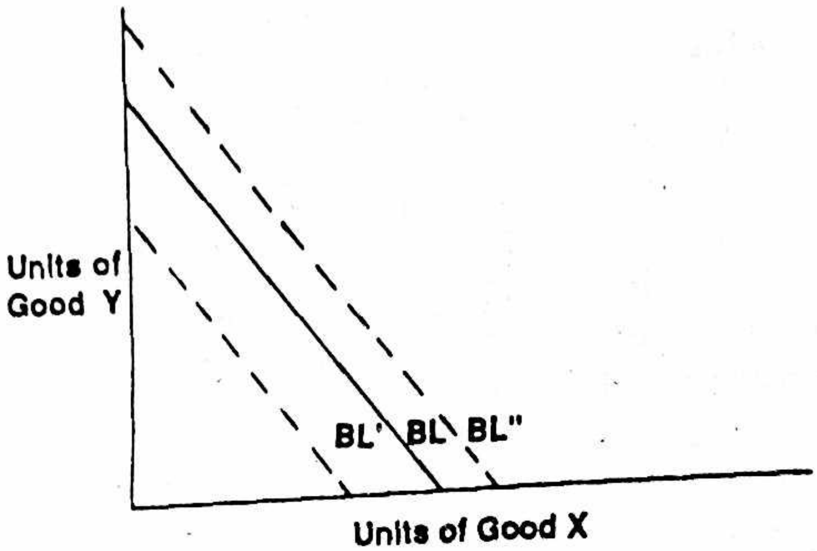
At equilibrium, D = S,
60 – 4P = 40 + 6P
20 = 10P; P = 2.
Substituting, 60 – 4P = 60 – 4(2) = 52,
or 40 + 6P = 40 + 6(2) = 52
(B)'s answer of 2 represents the price at equilibrium.

70. (A)

When a merger combines two or more processes in producing a product, that merger is known as a vertical merger or vertical integration. A horizontal merger could be illustrated by a merger between Smith's Dairy Processing and Jones' Dairy Processing (B). A competitive venture (C) is much too broad to answer the question and (D) and (E) may or may not be true.

71. (E)

The original budget line is drawn given a price for good X and a price for good Y. If the price of each good increases the shift to the left (less units of each good can now be purchased with higher prices) as shown by line BL' (A). An increasing income, with no change in prices, (more units of each good can be purchased) leads to a shift of the original budget line to BL."



72. (E)

T tests and F tests cannot be used when autocorrelation exists (described in the question). When autocorrelation is present, but the rest of the assumptions hold for the error term of an ordinary least squares regression, the regression coefficients' variances are not minimum variances. (C). Multicollinearity is the problem that arises when variables are highly correlated and is not necessarily related to autocorrelation (D).

73. (A)

When the price of one good falls (rises) relative to the price of another good, the effect is the same as the consumer receiving more (less) purchasing power or income. This is known as the income effect. (B) refers to a downward sloping demand curve. (C) is incorrect based on the definition of income effect. (D) is incorrect because it does not contain a relative price statement which involves the income effect. (E) essentially describes the substitution effect of price relatives.

74. (D)

International trade as based on the principle of comparative advantage leads to increased efficiency (D), increased real living standards (A), increased real output (C) and increased productivity (E).

75. (E)

The slope of the indifference curve is a ratio of marginal utilities (B). Marginal utility is the first derivative of a total utility function (D). The slope of a demand curve has little meaning by itself with respect to the marginal rate of substitution (A). The slope of the budget line is a ratio of prices.

76. (B)

(B) defines the concept contained in the question. Marginal physical product is the addition to output from adding one unit of input (A). Marginal cost is the addition to total cost from producing one more unit of output (C). Marginal revenue product is the addition to total revenue from adding one more unit of input (D). Marginal revenue is the addition to total revenue from selling one more unit of output.

77. (C)

Z is the only exogenous variable in the model. Y is determined by X and X is determined by Y resulting in (B) and (A) being incorrect. The second equation is an identity (D). The first equation is not deterministic because it contains an error term (E).

78. (B)

Since each individual receives equal income, $Y_1 = .5Y_T$ and $Y_2 = .5Y_T$. Break even income for the two individuals combined occurs when

$C_1+C_2=Y_T$.

$$Y_T=C_1+C_2$$
$$Y_T=5+.8\,(.5)\,Y_T+10+.7(.5)Y_T$$
$$Y_T=5+.4Y_T+10+.35Y$$
$$.25Y=15 \quad Y_T=60$$

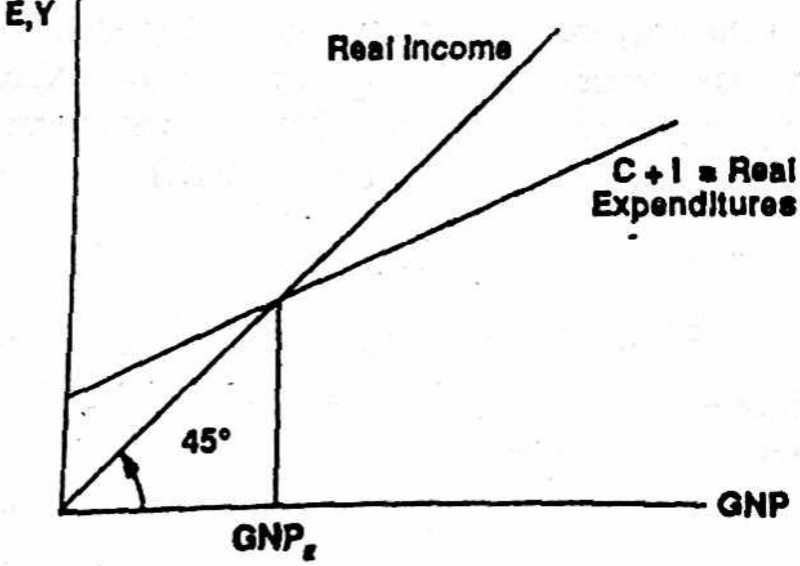
79. (A)

A firm's production function is a physical relationship between inputs and outputs and provides no information about dollar costs (B), (C) and (D).

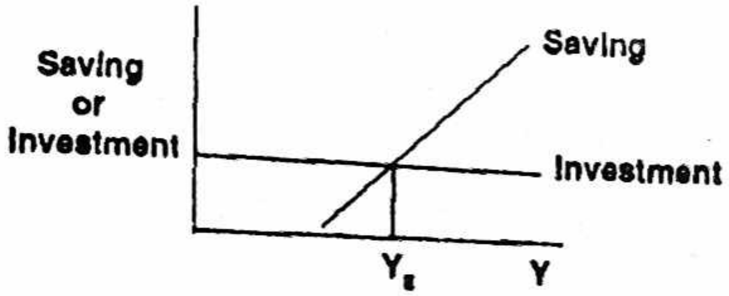
80. (D)

Consumer satisfaction will be maximized where marginal utilities per dollar for the two goods are equal. The last dollar spent on each good is purchasing the same additional satisfaction. (A) and (B) cannot be requirements because A and B can have different prices. (C) is incorrect because the consumer wishes to maximize total utility, but this will not be accomplished by equating total utility per dollar for the two goods. (E) is *not* true for a variety of reasons, e.g., limited income could easily prevent the level of consumption from even being accomplished.

81. (B)



To the left of GNP_E, desired real expenditures exceed GNP. The same analysis can be shown with a saving-investment diagram, given that the government and foreign sectors are ignored, through the macro accounting identity: C+I+C+S or S ≡ I



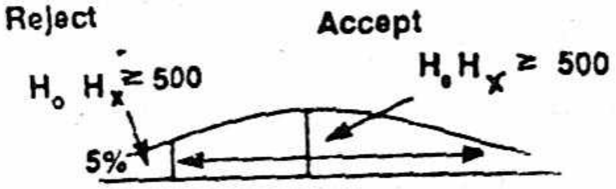
To the left of Y_E, saving is less than investment. (A) is obviously wrong since (B) is correct. (C) Equilibrium income does not provide direct information concerning full employment income. (D) Below equilibrium income, demand-pull economists would not expect inflation to exist. The real income (GNP) (45°) line never shifts.

82. (A)

All points on the 45° line represent points where the distance on the vertical axis equals the same distance on the horizontal axis. Businesses will be willing to increase the supply of goods and services if they receive receipts the same amount paid in costs (wages, interest, rent, and profits). (B) has the explanation reversed, and the line does not represent aggregate demand (C) and (D).

83. (B)

If the sample mean was too far below \$500 to be totally attributable to chance the conclusion would be that the mean was less than \$500. The question is whether the sample mean is significantly less than \$500.



(A) would indicate a test of significantly difference in either direction. (C) would only be appropriate if the question asked for significantly greater. For the information given we cannot determine if z or t is appropriate.

84. (C)

A type II error consists of accepting a false hypothesis, i.e. that the sample came from a universe with a mean of \$500 or greater. If it did not come from that universe, it had to be from a universe with a mean of less than \$500 (the alternative hypothesis). A type I error is rejection of the null hypothesis when it is true (B).

85. (A)

Marginal product (MP) of a factor of production is the additional ouput obtained when one more unit of input is used. When the marginal product per dollar (MP/P where P is price per unit of an input) is the same for each factor of production, no redistribution of inputs will result in a lower cost for that level of output. The crucial question for the producing firm is, where should the additional dollar be spent? From this question, the obvious comparison of dollar spending is with additional output (MP), not averages or totals.

86. (B)

The monopsony will equate MC_L to MRP_L but since it it a monopsony it will not pay wages, W_3, but will pay wages W_1 and employ Q_2 workers. The monopsony restricts employment and pays a lower wage than a pure competitor in hiring (C).

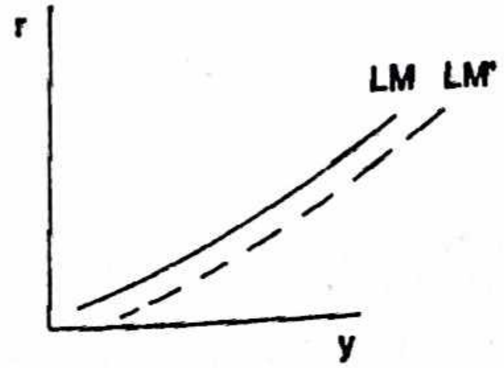
87. (A)

The effective reserve ratio in this problem is 25%. With a deposit of \$10,000 the bank must hold 20% of the deposit (\$2,000) as legal reserve and elects to hold an addition of 5% of that deposit (\$500) as excess reserves. The total held will be \$2,000 + \$500 = \$2500. The maximum loan on this \$10,000 deposit that the bank can make is \$10,000 - \$2,500 = \$7,500.

88. (A)

Tangency between any two lines (curves) implies that their slopes are equal at the point of tangency. In terms of this question, for goods Y and X, the tangency of the indifference curve and a budget line implies that at the point that what you are willing to give up of good X to obtain another unit of Y is equal to what the market dictates that this transaction must equal. If this equality does not hold, you could improve your welfare (utility) by changing your current consumption position. Choice (A) is the only answer consistent with the above facts. The remaining choices are simply statements that may or may not be true, depending on information that is not provided.

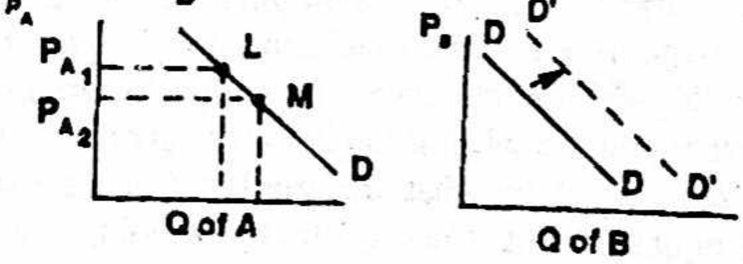
89. (B)



When the supply of money increases, LM shifts to LM'. Changing the supply of money does not mean the demand for money will change (C) and (D). If the only change that occurs is an increase in the supply of money, the interest rate would decrease (E).

90. (B)

When the price of product B decreases from P_{A1} to P_{A2} an increase in the quantity demanded of B occurs. If the demand curve for the product B shifts to the right (increases) as a result the products are complements.



The lowering of A's price has resulted in greater quantities demanded at each price of B. Substitutes will have the opposite effect (A). An inferior good is not described in terms of the question asked (C) and (E). Elasticity refers to the % quantity response of one good to the % price change of that good.

91. (D)

For a firm to maximize profits, that firm must produce the level of output which accomplishes this at minimum cost. Minimizing cost for any level of output requires that the additional cost of producing another unit of output, using more of any input, be equal across all inputs of production. Therefore, for the firm that maximizes profit for some positive level of output by employing two inputs A and B, it must be true that:

$$\frac{\Delta TC / \Delta Q}{\Delta A / \Delta A} = \frac{\Delta TC / \Delta Q}{\Delta B / \Delta B} = \frac{\Delta TC}{\Delta Q}$$

where TC=total cost
Q= output
Δ = symbol for change

This chain of inequalities can be rewritten based on the given information and definitions as:

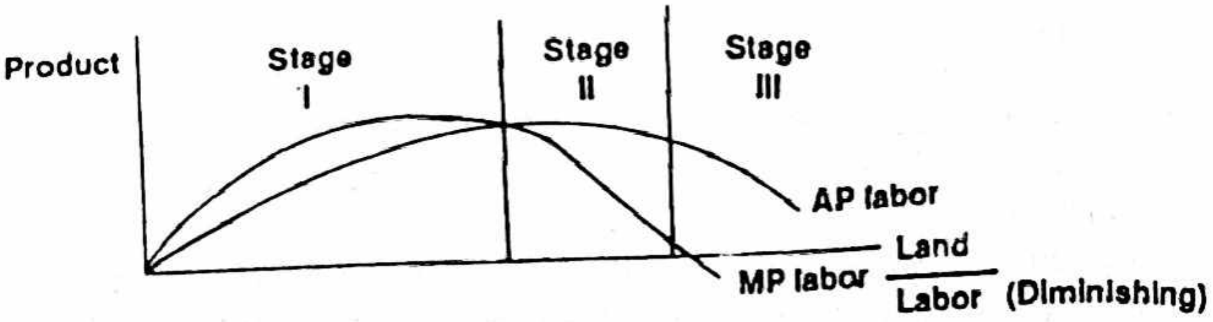
$$P_A/MPP_A = P_B/MPP_B = MC$$

where MC = marginal cost

At the current level of profit maximizing output, this firm is indeed satisfying the condition since $\frac{\$4}{8} = \frac{\$8}{16}$

Hence, MC is \$.50 for the firm at its profit-maximizing level of output. This information reveals what the marginal revenue (MR) is equal to since another necessary condition to maximize profits requires a firm to produce that output for which MC=MR. Therefore, MR is equal to \$.50 (D).

92. (D)

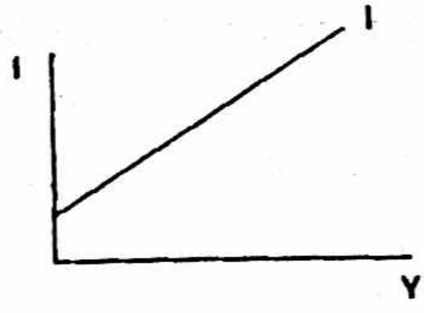


Marginal product is positive in Stage II because total product continues to increase. Average product is declining (A). Marginal product is positive but diminishing.

93. (B)

When demand is inelastic, the consumer is not all that responsive to a price change. When price in increased, consumers will purchase less but not less enough to offset the now higher price (B). When demand is elastic and price increases, total receipts will fall. (C), (D), and (E) have been explained by the counter situation.

94. (A)



The accelarator principle relates a change in output or income to a change in investment. When income increases (growth) investment increases as shown by the upward sloping investment curve (induced investments). (B) and (D) would require incorrectly a downward sloping line and (C) describes autonomous investment and involves only the multiplier concept.

95. (D)

Average revenue is obtained by dividing the total revenue function by Q. $(200Q-0.1Q^2)/Q=200-0.1Q$ (A). The marginal revenue equation is the first derivative of the total revenue function, 200-0.2Q (B). The demand equation and average revenue equation are the same thing (C).

96. (B)

The consumption function is linear and is specified as $C = a + 2/3Y$, where C is consumption and Y is disposable income. At the break-even point $C = Y$ or $a + 2/3$ (\$15,000) = \$15,000; a + \$10,000 = \$15,000; a = \$5,000. When disposable income is \$21,000, $C = a + 2/3$ (Y) = \$5,000 + 2/3 (\$21,000) = \$19,000.

97. (E)

(A) and (C) are characteristics which determine the elasticity of a commodity. Both are stated in the direction which makes the demand for the commodity more inelastic, i.e., makes the consumer less responsive to a price change (B). If we were to measure the elasticity of demand at a greater period of time following a price change, the elasticity of demand would tend to be larger since more individuals are able to locate substitutes for the now-more-responsive good.

98. (E)

Horizontal MR curves indicate the firm is operating in a purely competitive industry. Since there are both variable costs and total costs, (B) is correct. At a price of \$12, the firm is covering its variable costs (C). When the price is \$22 or greater, the firm is covering its costs.

99. (D)

To the right of the intersection of the MC curve with the AVC curve, any point on the MC curve will be one in which the firm covers variable costs and has revenue to apply to the fixed costs. Output determination is based on MC = MR, and this rule provides the information that the MC curve above the AVC curve will be the short run supply curve. Prior to MC's intersection with AVC, the firm will not operate because variable costs are not being covered (A). (B) is not correct because the firm does not equate AVC with MR to determine the output level. ATC does not determine output (C).

100. (D)

A linear curve only means the slope is unchanging. Elasticity of a demand curve is not the same thing as slope. Elasticity is $\%\Delta Q/\%\Delta P$, not $\Delta Q/\Delta P$. There are different elasticities even though the slope is the same. A purely competitive firm's demand curve is horizontal (E).

101. (D)

The formula for the geometric mean is the nth root of the product of the value. For this question, n=2 and the product consists of multiplying the units of A times the units of B;

$(\text{units of A} \times \text{units of B})^{1/2}$
For (A), $(4 \times 9)^{1/2} = 6$ and
for (B), $(9 \times 4)^{1/2} = 6$.
(C) is incorrect because $(10 \times 10)^{1/2}$, not 100.

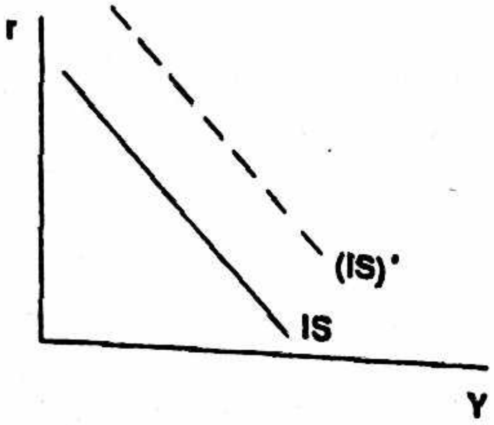
102. (E)

Equilibrium exists because the firm is operating where MC=P or MR and no economic profits are being made (A) and (B). Since the (only average cost curve shown is AC rather than ATC or AVC the situation is clearly a long run situation) (C). MC=AC=P or MR is the triple identity (D).

103. (A)

C=200 = .9Y; C + I = Y
Substituting the first equation (and the given that I=300) into the second equation 200 = .9Y + 300 = Y
500 = .1Y we obtain Y = $5000.

104. (A)



Expectation of increase profits would shift the curve upward. The (IS)' shows increased investment at each r. (B) is contrary to the statement in the question. (C) and (D) are not relevant for the information provided.

105. (A)

1976 GNP in real terms is $1000/1.2 = $833 and 1986 GNP in real terms is $2200/1.6 = $1375. The difference is $1375 - $833 = $542. (B) The price level rose from 1976 to 1986 (1.2 vrs. 1.6). (C) is incorrect because real GNP increased by $542/$833*100% = 65%. (D) nominal GNP increased by 120%, not 80%. (E) the price level increased by 33%, not 25%.

106. (E)

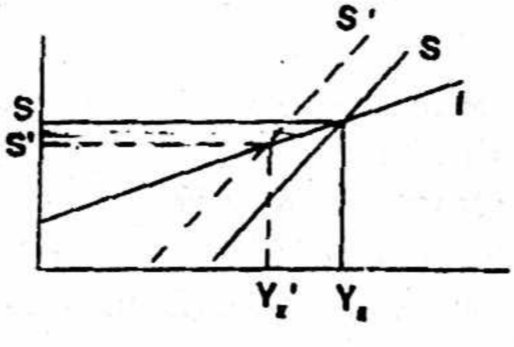
To obtain values which correspond to the values given for (A-C) requires that changes in income and expenditures be obtainable. Only one level of income and expenditure was presented.

107. (E)

(A) and (C) contain the same basic concept, derived demand, (B) is consistent with the law of demand. (D) is also true.

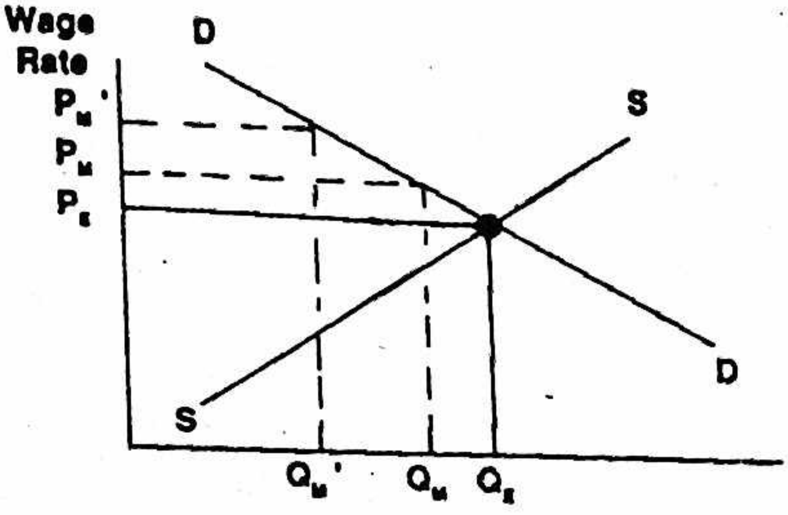
108. (A)

When investment is induced as shown by the upward sloping line, an attempt to save more (S moving to S') results in actual smaller savings out of a smaller income (Y_E'). The paradox is that the attempt to save more actually results in less savings. (B) describes the movement of the S curve incorrectly. (C) is inconsistent because the investment depicted is induced investment. (D) is incorrect when described in the context of (A) and (E) is not relevent.



109. (C)

A minimum wage is set because someone deems the market wage is "too low". When the minimal wage is raised, the quantity supplied at that wage exceeds the quantity demand (see graph). The increased wages causes the employer to substitute capital for labor. The graph clearly shows less employment (A), not a scarcity of workers (a surplus) (B), and an increase in the unemployment problem (E). The marginal productivity of labor will not decrease. On the contrary, it will rise due to the fact that the remaining workers have more capital to work with.



110. (C)

Generally (C) would be correct. Both distributions tend to be more unequal in less developed countries.

111. (B)

When the driver buys 15 gallons, the 15th gallon of gasoline costs \$1.10 but the normal cost of a car wash of \$3.00 is free. The driver pays \$1.10 for the marginal unit of gasoline but saves \$3.00 on the car wash. Thus, the combination of \$3.00 less for the car wash (-\$3.00) and the \$1.10 for gas is –\$1.90.

112. (E)

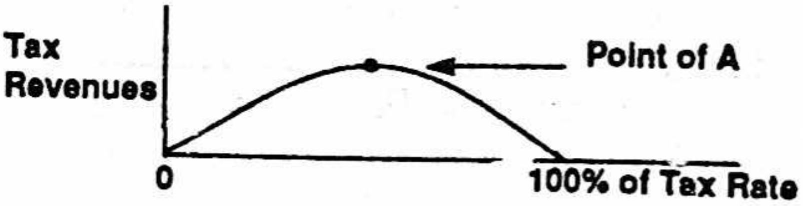
The explanation indicates that Y depends on X (B), but inclusion of an error term (u_i) indicates an economic relationship is specified. An exchange of identity would by Y = C + I + G (A). A deterministic relationship would not include an error term.

113. (C)

Comparative advantage exists when a country has an absolute advantage in producing a good, but comparative advantage also exists when a country has less absolute disadvantage in producing a good. This explanation excludes (A) and (B). Benefits from trade will occur if each country specializes in producing the good for which it has comparative advantage (D) and (E).

114. (A)

(A) is the definition of dumping.



115. (A)

The curve above shows Laffer's relationship. This question consists of a definition of the Laffer concepts.

116. (A)

Let the symbol > indicate preferred to, < indicate not preferred to, and the symbol = indicate indifference. The given information then implies the following:

A > B; B > C; A = D; hence D > C (A)

The other choices are inconsistent with the given information, i.e. they violate the axiom of transitivity.

117. (B)

$\text{MPC} + \text{MPS} = 1 \qquad \text{MPS} = \Delta S/\Delta Y = \$200/\$500 = 0.4$

$\text{MPC} + 0.4 = 1;\ \text{MPC} = 0.6$

118. (C)

The equilibrium condition for a consumer maximizing satisfaction is $(MU_X/P_X) = (MU_Y/P_Y)$ and all income is spent. We only know that $(MU_Y/P_Y) > (MU_X/P_X)$. That is, we know that the consumer is receiving more utility per dollar from Y than X. Therefore, the consumer should purchase more of Y, which the consumer could do by either spending income that has not been allocated to the purchase of X or reducing purchases of X and using that income for the purchase of more Y.

119. (A)

Expansive fiscal policy would consist of deficit financing; easy money would consist of increasing the money supply and/or lowering the rate of interest. Restrictive fiscal policy would most likely consist of budget surplus and tight money would consist of decreasing the money supply and/or raising the rate of interest.

120. (D)

Satisfaction would be maximized where the MU/$ for the two goods are equal and all income is spent. An MU/$ column is added to the data and where the MU/$ are equal and income is spent the maximum occurs. With an income of $35 the consumer would buy 5 units of A at $2 each ($10) and 5 units of B at $5 each ($25) for a total spending of $35.

121. (E)

The data can be presented in tabular form as follows:

	A	B
X	20	40
Y	40	20

A's ratio of producing Y to X is 40 to 20, or 2 to 1. B, however, has a ratio of producing X to Y which is 1 to 2. The Ricardian model of trade and the associated technology imply that the relative price without trade of X in terms of Y is 2 for country A, while the same price for country B is 1/2. Therefore, trade would be mutually beneficial and affordable: (A) and (B) would be incorrect. (C) and (D) would be correct if Y in (D) was interchanged with X in (C). The Ricardian model of trade would imply that Arica should export Y to Britica, while Britica should export Y to Arica. Answer (E) is consistent with this analysis.

122. (C)

The price level rose from 115 to 125 between the two years. The difference is 125 - 115 = 10 and the rate of inflation between the two years is (10/115) *100% = 8.7%. (A) and (B) compare the rate of inflation based on the year 1984.

123. (A)

The problem of errors in variables occurs when the expected value of the error term is not independent of the independent variable, (E(uX)O). The result is biased estimates of the coefficients. Autocorrelation has been defined previously (B). Misspecification is one of the causes of errors in variables (D).

124. (A)

The MPC is given as 2/3 and, at a level of income of \$6000, consumption equals income. The consumption function, $C = a + bY$, with the given information, can be solved for a.

$$\$6000 = a + 2/3\ (\$6000)$$
$$a = \$2000$$

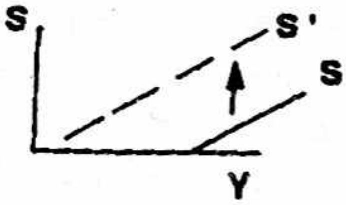
When $Y = \$9000$ by using the consumption function, $C = \$2000 + 2/3\ (\$9000)$, we obtain for consumption expenditures, \$8000.

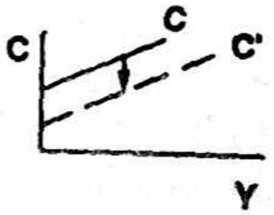
125. (A)

The marginal propensity to import is $\Delta M/\Delta Y$. Assuming that taxes paid (if any) and investment spending is autonomously determined, relative to income, the multiplier is $k = 1/(\Delta S/\Delta Y + \Delta M/\Delta Y)$. If the marginal propensity to import decreases, the multiplier, and thus income, would increase. The multiplier is obviously not lowered (B). (C) and (D) depend not only on what happens to the marginal propensity to import but also on what happens to income.

126. (C)

The shifts are shown by the broken lines on the standard Keynesian graphs.





127. (A)

Since the tax rate is .6, an increase of $50 billion income will result in $20 billion additional disposable income ($50 billion–.6 ($50 billion)). With an MPC of .8, $16 billion of the disposable income will consist of consumption expenditure ($20 billion (.8)).

128. (D)

Since the exchange rate is 1.6 pounds equals $1, an American car which sells for $8000 would cost 8000 (1.6 pounds) = 12,800 pounds for an equivalent British car.

129. (A)

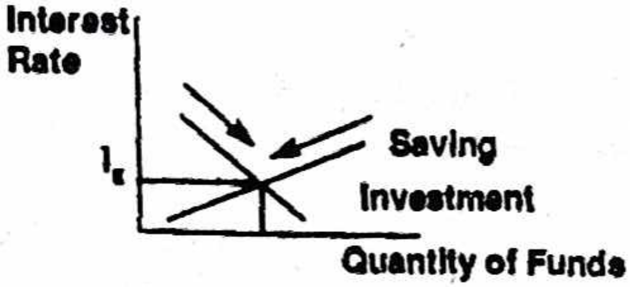
Multicollinearity occurs when independent variables are correlated. If there is only one independent variable, this problem cannot occur. Multicollinearity causes the standard errors to become large (B). The Durbin-Watson statistic is used to detect autocorrelation (C). Any time there are two or more independent variables in an equation, multicollinearity can occur (D). Multicollinearity prevents the researcher from obtaining accurate separate effects of variables (E).

130. (A)

By selling government securities, the Fed would be converting the public's money into near money which would decrease the quantity of money held by the public. If the Fed bought government securities, it would have the opposite effect (B). Lowering the legal reserve requirement provides excess reserves for the banks which they may elect to loan (C). Raising the discount rate is a signal to commercial banks that making more loans is less desirable (D). The Fed does not have the power to change taxes (E).

131. (B)

Classical economists used the interest rate (i) mechanism to equate saving and investment.



(B) describes the situation shown on the graph above . (C) and (D) are incorrect given the upward sloping saving curve and the downward sloping investment curve. (A) is incorrect because the classical economists saw the interest rate mechaism preventing unemployment.

132. (E)

A depreciation of the U.S. dollar makes U.S. exports more attractive to foreigners because their currency is worth more relative to the dollar (C). Since the dollar is worth less compared to other currencies, U.S. imports would decrease (B). The U.S. balance of payments difficulties would be expected to decrease (D).

133. (B)

When diminishing marginal returns sets in, additional units of input have to be made to obtain constant increases in output. Thus, the cost per unit must increase. That is, the average cost will increase. The relevant curve for short run supply of a perfectly competive firm is the firm's short run marginal cost curve (A). Diseconomies of scale is a long run concept and is inconsistent with the term short run (C). A monopoly has a rising portion of the curve (D). Profitability depends on cost and revenue (E).

134. (A)

Terms of trade is defined as a ratio of export prices to import prices.

135. (A)

When economists speak of shocking the system (model), a reference is being made to a change in the system. Specifically in this question, the shock is described as "expansionary supply side." The correct answer has to either describe a shift of the aggregate supply curve which would be expansionary (a shift to the right) or a result of a shift to the right. (A) represents a result of a supply side shock. (B) is shifting the supply curve the wrong direction. (C) and (D) are demand side shocks and (E) would result from a recessionary supply side shock.

GRE

ECONOMICS TEST

TEST V